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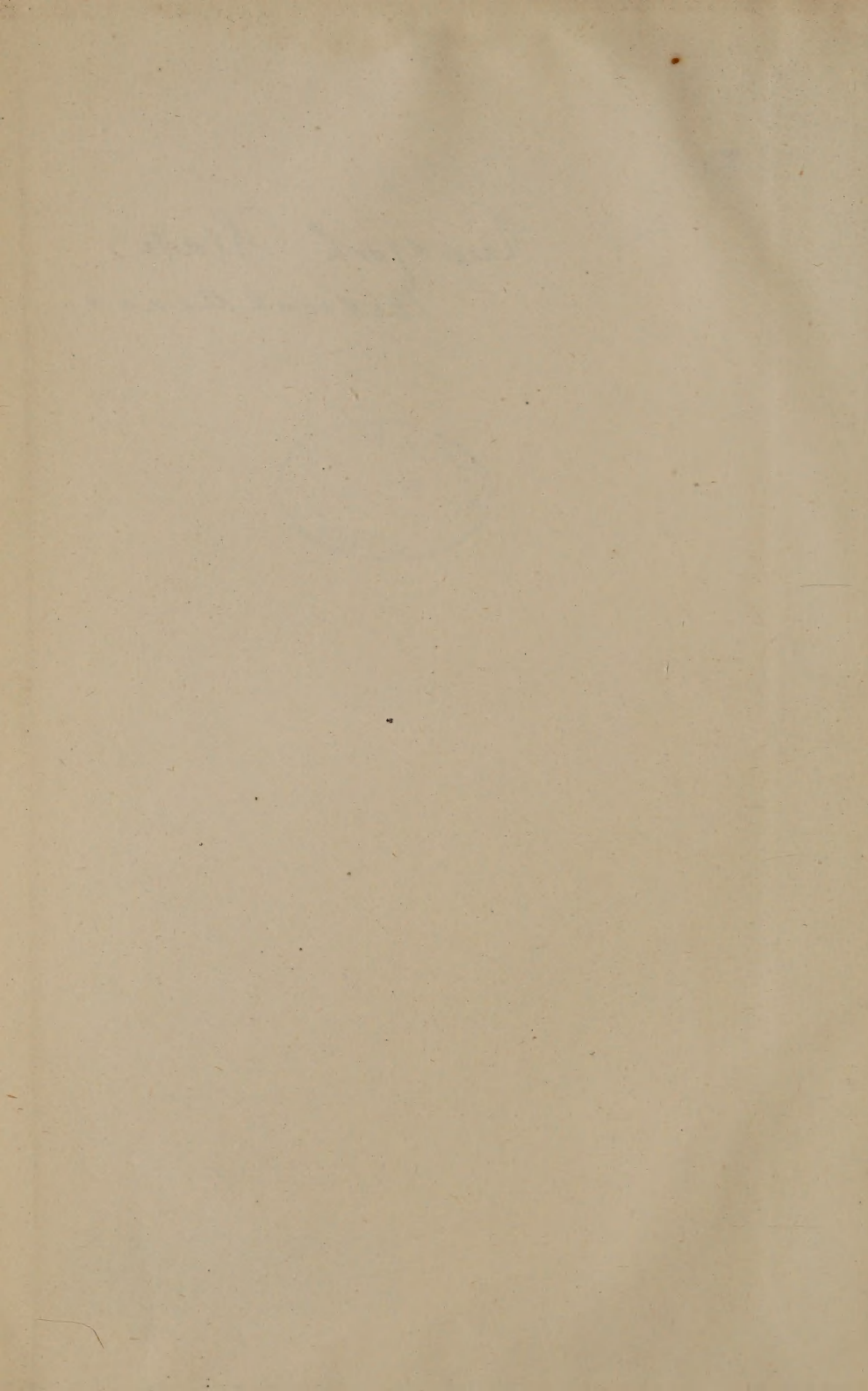
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TRANSACTIONS

OF THE

NEW YORK STATE MEDICAL ASSOCIATION.

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JOHN SHRADY, M. D., of New York County.

CALEB GREEN, M. D., of Cortland County,

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JOHN SHRADY, M. D.,

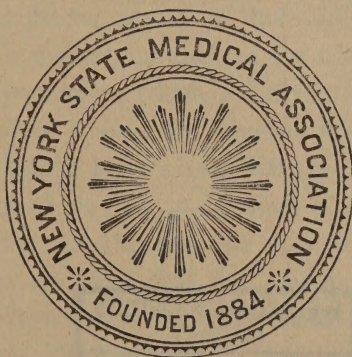
CHAIRMAN AND EDITOR OF THE TRANSACTIONS.

TRANSACTIONS
OF
THE NEW YORK STATE
MEDICAL ASSOCIATION,

FOR THE YEAR 1885.

VOLUME II.

EDITED FOR THE ASSOCIATION
BY JOHN SHRADY, M. D.,
OF NEW YORK COUNTY.



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P R E F A C E .

THE present as well as the first volume of Transactions is the outcome of a desire to give to the medical profession in general a summary of the status of many topics which have claimed especial study both abroad and at home. The aim has been to make the subjects practically valuable, without an assumption of undue dogmatism or an attempt to arbitrarily settle disputed claims. The papers as published reflect, of course, the convictions of the authors, and as such carry with themselves their own influence as well as their individuality. They are the work of a modest, industrious, yet withal authoritative element in the profession, which for divers reasons has been silent and heretofore content to leave no legacy to posterity. A proof has at length been given that the busy practitioner can spare a moiety of his time in the cause of mutual enlightenment, and the zeal for the common good that has been displayed encourages the hope that the present volume will constitute one of a very long series. It is not too much to say that the papers read at the first annual meeting, excellent as they were, have now been paralleled both in interest and in importance.

In order that the time of the reader may be economized, pains have been taken to make the index as full as possible,

even to the extent of pointing out mere items of intelligence and bringing them under their proper classification. A ready plan is thus afforded to those who can not consecutively read the papers presented, and in some respects may supply the place of an epitome on the more recent topics of the hour. The names of authorities are also mentioned in the scheme as thus prepared, with their views duly and succinctly credited.

A reference to the obituary page is solicited, as being a simple record of the worth of those whose names will recall many pleasant memories, mingled with the regret that their voices are no longer to be heard in work and counsel. Some of these have been "nipped by an untimely frost," while others have been garnered, ripe with years and honors. Some have fallen with a mere promise of what they might have been, others have left a fame which has gone beyond our seas. All were averse to ostentatious display, and all deserve the tribute of a tear in secret.

* * The Third Annual Meeting of the Association will be held in New York city, November 16, 17, and 18, 1886.



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OFFICERS AND COUNCIL FOR 1884.

PRESIDENT.

HENRY D. DIDAMA, M. D., Syracuse, Onondaga County, Third District.

VICE-PRESIDENTS.

FIRST DISTRICT, J. MORTIMER CRAWE, M. D., Jefferson County.

SECOND DISTRICT, TABOR B. REYNOLDS, M. D., Saratoga County.

FOURTH DISTRICT, B. L. HOVEY, M. D., Monroe County.

FIFTH DISTRICT, NATHANIEL C. HUSTED, M. D., Westchester County.

RECORDING SECRETARY.

CALEB GREEN, M. D., Cortland County.

CORRESPONDING AND STATISTICAL SECRETARY.

E. D. FERGUSON, M. D., Rensselaer County.

TREASURER.

JOHN H. HINTON, M. D., New York County.

MEMBER OF THE COUNCIL AT LARGE.

JOHN W. S. GOULEY, M. D., New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, JOHN P. GRAY, M. D., Oneida County.

" " CONANT SAWYER, M. D., Essex County.

SECOND DISTRICT, J. W. MOORE, M. D., Albany County.

" " THOMAS WILSON, M. D., Columbia County.

THIRD DISTRICT, FREDERICK HYDE, M. D., Cortland County.

" " ELY VAN DE WARKER, M. D., Onondaga County.

FOURTH DISTRICT, EDWARD M. MOORE, M. D., Monroe County.

" " M. W. TOWNSEND, M. D., Genesee County.

FIFTH DISTRICT, JOSEPH C. HUTCHISON, M. D., Kings County.

" " AUSTIN FLINT, JR., M. D., New York County.

COMMITTEE OF ARRANGEMENTS FOR 1884.

HENRY D. DIDAMA, M. D., PRESIDENT.

CALEB GREEN, M. D., RECORDING SECRETARY.

E. D. FERGUSON, M. D., CORRESPONDING SECRETARY.

Ex-officio members of the committee.

JOHN W. S. GOULEY, M. D., CHAIRMAN.

AUSTIN FLINT, JR., M. D.

JOHN H. HINTON, M. D.

ABRAM DUBOIS, M. D.

AUSTIN FLINT, M. D.

E. S. F. ARNOLD, M. D.

NATHAN BOZEMAN, M. D.

ALLEN S. CHURCH, M. D.

F. S. DENNIS, M. D.

WM. DETMOLD, M. D.

GASPAR GRISWOLD, M. D.

GEO. T. HARRISON, M. D.

N. C. HUSTED, M. D.

S. T. HUBBARD, M. D.

WM. T. LUSK, M. D.

S. S. PURPLE, M. D.

CHAS. A. LEALE, M. D.

JARED LINSLEY, M. D.

ISAAC E. TAYLOR, M. D.

WHITMAN V. WHITE, M. D.

JOSEPH WIENER, M. D.

CHAS. S. WOOD, M. D.

WM. YOUNG, M. D.

OFFICERS AND COUNCIL FOR 1884-'5.

PRESIDENT.

JOHN P. GRAY, M. D., Utica, Oneida County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, WM. H. ROBB, M. D., Montgomery County.

THIRD DISTRICT, JOHN G. ORTON, M. D., Broome County.

FOURTH DISTRICT, JOSEPH C. GREENE, M. D., Erie County.

FIFTH DISTRICT, JOSEPH C. HUTCHISON, M. D., Kings County.

RECORDING SECRETARY.

CALEB GREEN, M. D., Cortland County.

CORRESPONDING AND STATISTICAL SECRETARY.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

TREASURER.

JOHN H. HINTON, M. D., 41 West Thirty-second Street, New York City.

MEMBER OF THE COUNCIL AT LARGE.

SAMUEL S. PURPLE, M. D., New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, WM. GILLIS, M. D.,

Franklin County, term expires in 1886.

“ “ CONANT SAWYER, M. D.,

Essex County, term expires in 1885.

SECOND DISTRICT, ROBERT C. McEWEN, M. D.,

Saratoga County, term expires in 1886.

“ “ THOMAS WILSON, M. D.,

Columbia County, term expires in 1885.

- THIRD DISTRICT, FREDERICK HYDE, M. D.,
Cortland County, term expires in 1886.
“ “ ELY VAN DE WARKER, M. D.,
Onondaga County, term expires in 1885.
- FOURTH DISTRICT, DARWIN COLVIN, M. D.,
Wayne County, term expires in 1886.
“ “ M. W. TOWNSEND, M. D.,
Genesee County, term expires in 1885.
- FIFTH DISTRICT, JOHN W. S. GOULEY, M. D.,
New York County, term expires in 1886.
“ “ AUSTIN FLINT, JR., M. D.,
New York County, term expires in 1885.
-

The Second Annual Meeting of the Association was held in New York City, November 17, 18, and 19, 1885.

OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1885.

FIRST OR NORTHERN BRANCH.

*The First Annual Meeting was held at Utica, Oneida County,
on the second Tuesday in July, 1885.*

OFFICERS.

PRESIDENT, JOHN P. GRAY, M. D., Utica, Oneida County.

SECRETARY, WILBUR H. BOOTH, M. D., Utica, Oneida County.

EXECUTIVE COMMITTEE.

L. C. DODGE, M. D., Rouse's Point, Clinton County.

E. F. EDGERLY, M. D., Moriah Center, Essex County.

WM. GILLIS, M. D., Fort Covington, Franklin County.

THOMAS McGANN, M. D., Wells, Hamilton County.

JOHN P. SHARER, M. D., Little Falls, Herkimer County.

IRA H. ABELL, M. D., Antwerp, Jefferson County.

ALBERT A. JOSLIN, M. D., Greig, Lewis County.

G. ALDER BLUMER, M. D., Utica, Oneida County.

BYRON DE WITT, M. D., Oswego, Oswego County.

G. L. SUTTON, M. D., Massena, St. Lawrence County.

JAMES FERGUSON, M. D., Glens Falls, Warren County.

SECOND OR EASTERN BRANCH.

*The First Annual Meeting was held at Saratoga Springs,
Saratoga County, on the fourth Tuesday in June, 1885.*

OFFICERS.

PRESIDENT, WM. H. ROBB, M. D., Amsterdam, Montgomery County.

SECRETARY, GEO. E. McDONALD, M. D., Schenectady, Schenectady
County.

EXECUTIVE COMMITTEE.

R. H. SABIN, M. D., West Troy, Albany County.
 THOMAS WILSON, M. D., Claverack, Columbia County.
 C. R. BLAKE, M. D., Northville, Fulton County.
 ROBERT SELDEN, M. D., Catskill, Greene County.
 EZRA GRAVES, M. D., Amsterdam, Montgomery County.
 M. H. BURTON, M. D., Troy, Rensselaer County.
 TABOR B. REYNOLDS, M. D., Saratoga Springs, Saratoga County.
 H. C. VAN ZANDT, M. D., Schenectady, Schenectady County.
 H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
 F. J. HINDS, M. D., Salem, Washington County.

THIRD OR CENTRAL BRANCH.

The First Annual Meeting was held at Syracuse, Onondaga County, on the second Tuesday in June, 1885.

OFFICERS.

PRESIDENT, JOHN G. ORTON, M. D., Binghamton, Broome County.
 SECRETARY, CHAS. W. BROWN, M. D., Elmira, Chemung County.

EXECUTIVE COMMITTEE.

J. H. CHITTENDEN, M. D., Binghamton, Broome County.
 WM. R. LAIRD, M. D., Auburn, Cayuga County.
 GEO. W. AVERY, M. D., Norwich, Chenango County.
 F. W. ROSS, M. D., Elmira, Chemung County.
 H. C. HENDRICK, M. D., McGrawville, Cortland County.
 O. M. ALLABEN, M. D., Margaretville, Delaware County.
 H. W. CARPENTER, Oneida, Madison County.
 ELY VAN DE WARKER, M. D., Syracuse, Onondaga County.
 J. K. LEANING, M. D., Fly Creek, Otsego County.
 B. T. SMELZER, M. D., Havana, Schuyler County.
 ELIAS LESTER, M. D., Seneca Falls, Seneca County.
 R. W. EASTMAN, M. D., Berkshire, Tioga County.
 WM. FITCH, M. D., Dryden, Tompkins County.

FOURTH OR WESTERN BRANCH.

The First Annual Meeting was held at Rochester, Monroe County, on the second Tuesday in May, 1885.

OFFICERS.

PRESIDENT, JOSEPH C. GREENE, M. D., Buffalo, Erie County.
 SECRETARY, WILLIAM H. THORNTON, M. D., Buffalo, Erie County.

EXECUTIVE COMMITTEE.

B. C. WAKLEY, M. D., Angelica, Allegany County.
 O. A. TOMPKINS, M. D., Randolph, Cattaraugus County.
 WILLIAM CHACE, M. D., Mayville, Chautauqua County.
 JOHN CRONYN, M. D., Buffalo, Erie County.
 A. P. JACKSON, M. D., Oakfield, Genesee County.
 R. J. MENZIE, M. D., Caledonia, Livingston County.
 E. M. MOORE, M. D., Rochester, Monroe County.
 SIMEON T. CLARK, M. D., Lockport, Niagara County.
 JAMES H. ALLEN, M. D., Gorham, Ontario County.
 JAMES CHAPMAN, M. D., Medina, Orleans County.
 JOHN S. JAMISON, M. D., Hornellsville, Steuben County.
 O. G. POMEROY, M. D., Newark, Wayne County.
 MILAN BAKER, M. D., Warsaw, Wyoming County.
 DAVID M. SMITH, M. D., Penn Yan, Yates County.



FIFTH OR SOUTHERN BRANCH.

The First Annual Meeting was held in Brooklyn, Kings County, on the second Tuesday in October, 1885.

OFFICERS.

PRESIDENT, JOSEPH C. HUTCHISON, M. D., Brooklyn, Kings County.
 SECRETARY, E. H. SQUIBB, M. D., Brooklyn, Kings County.

EXECUTIVE COMMITTEE.

JOHN YOUNG, M. D., Fishkill-on-Hudson, Dutchess County.
 R. M. WYCKOFF, M. D., Brooklyn, Kings County.
 SAMUEL S. PURPLE, M. D., New York, New York County.
 W. B. EAGER, M. D., Middletown, Orange County.
 G. W. MURDOCK, M. D., Cold Spring, Putnam County.
 EDWARD G. RAVE, M. D., Hicksville, Queens County.
 F. U. JOHNSTON, M. D., New Brighton, Richmond County.
 WILLIAM GOVAN, M. D., Stony Point, Rockland County.
 W. D. WOODEND, M. D., Huntington, Suffolk County.
 I. PURDY, M. D., Mongaup Valley, Sullivan County.
 P. D. B. HOORNBECK, M. D., Wawarsing, Ulster County.
 NATHANIEL C. HUSTED, M. D., Tarrytown, Westchester County.

LIST OF FELLOWS IN ATTENDANCE AT THE
FIRST ANNUAL MEETING IN NEW YORK CITY,

Held November 18, 19, and 20, 1884.

FIRST DISTRICT.

OLINTON COUNTY.

Lyon, E. M., Plattsburgh.

ESSEX COUNTY.

Barton, L., Willsborough.

Sawyer, Conant, Au Sable Forks.

FRANKLIN COUNTY.

Gillis, William, Fort Covington.

HERKIMER COUNTY.

Potter, Vaughn C., Starkville.

Sharer, John P., Little Falls.

JEFFERSON COUNTY.

Abell, Ira H., Antwerp.

Crawe, J. M., Watertown.

ONEIDA COUNTY.

Gray, John P., Utica.

Porter, H. N., New York Mills.

OSWEGO COUNTY.

Hall, William A., Fulton.

WARREN COUNTY.

Barney, C. S., Glens Falls.

Martine, Godfrey R., Glens Falls.

Ferguson, James, Glens Falls.

SECOND DISTRICT.

ALBANY COUNTY.

Hall, John E., Green Island.

Moore, J. W., Cohoes.

Houston, D. W., Cohoes.

Sabin, R. H., West Troy.

Lyon, George E., West Troy.

COLUMBIA COUNTY.

Benham, J. C., Hudson. Wilson, Thomas, Claverack.

FULTON COUNTY.

Blake, Clarence R., Northville.

GREENE COUNTY.

Conkling, George, Durham. Selden, Robert, Catskill.

MONTGOMERY COUNTY.

Ayres, Alexander, Fort Plain. Leach, H. M., Glen.
Biggam, William H., Fort Plain. Robb, W. H., Amsterdam.
Graves, Ezra, Amsterdam. Rulison, Elbert T., Amsterdam.

RENSSELAER COUNTY.

Allen, Charles S., Greenbush. Hannon, J. C., Hoosac Falls.
Bontecou, R. B., Troy. Harvie, J. B., Troy.
Burton, M. H., Troy. Mitchell, H. E., Troy.
Cooper, W. C., Troy. Seymour, W. Wotkyns, Troy.
Ferguson, E. D., Troy.

SARATOGA COUNTY.

Babcock, Myron N., Saratoga Springs. Reynolds, T. B., Saratoga Springs.
McEwen, Robt. C., Saratoga Springs. Stubbs, Roland H., Waterford.
Murray, Byron, J., Wilton.

SCHENECTADY COUNTY.

De La Mater, S. G., Duaneburgh. Reagles, J. R., Schenectady.
McDonald, George E., Schenectady. Van Zandt, H. C., Schenectady.

SCHOHARIE COUNTY.

Kingsley, H. F., Schoharie.

THIRD DISTRICT.

BROOME COUNTY.

Chittenden, J. H., Binghamton. Putnam, F. W., Binghamton.
Orton, J. G., Binghamton. Richards, C. B., Binghamton.

CAYUGA COUNTY.

Kenyon, M., Moravia. Laird, William R., Auburn.

CHEMUNG COUNTY.

Brown, C. W., Elmira. Ross, F. W., Elmira.
Flood, P. H., Elmira. Wales, Theron A., Elmira.
Price, J. H., Elmira.

CHENANGO COUNTY.

Avery, G. W., Norwich.

Blair, L. P., McDonough.

CORTLAND COUNTY.

Jewett, H. O., Cortland.

Tripp, John D., Virgil.

Knapp, John H., Harford.

DELAWARE COUNTY.

Allaben, O. M., Margaretville.

MADISON COUNTY.

Carpenter, H. W., Oneida.

ONONDAGA COUNTY.

Aberdein, Robert, Syracuse.

Head, A. D., Syracuse.

Didama, H. D., Syracuse.

Munson, W. W., Otisco.

Donohue, F. O., Syracuse.

Parsons, Israel, Marcellus.

Earll, George W., Skaneateles.

Saxer, L. A., Syracuse.

Edwards, George A., Syracuse.

Van de Warker, E., Syracuse.

Gillett, Charles A., Syracuse.

OTSEGO COUNTY.

Hills, L. H., Cooperstown.

Martin, J. H., Otego.

Leaning, J. K., Fly Creek.

SENECA COUNTY.

Dunn, J., Lodi.

TIOGA COUNTY.

Eastman, R. W., Owego.

FOURTH DISTRICT.

CATTARAUGUS COUNTY.

Tompkins, O. A., Randolph.

CHAUTAUQUA COUNTY.

Ames, Edward, Sherman.

Dean, H. J., Brocton.

Chace, William, Mayville.

Strong, Thomas D., Westfield.

Darling, F. B., Westfield.

ERIE COUNTY.

Banta, Rollin L., Buffalo.

Johnson, Thomas M., Buffalo.

Cronyn, John, Buffalo.

Lynde, U. C., Buffalo.

Daniels, Clayton M., Buffalo.

Murray, W. D., Tonawanda.

Gay, C. C. F., Buffalo.

Rochester, T. F., Buffalo.

Greene, Joseph C., Buffalo.

Tremaine, W. S., Buffalo.

Greene, W. D., Buffalo.

Wyckoff, C. C., Buffalo.

Hoyer, F. F., Tonawanda.

GENESEE COUNTY.

Crane, Frank W., Corfu.

Townsend, M. W., Bergen.

MONROE COUNTY.

Buckley, Charles, Rochester.	Moore, E. M., Rochester.
Fuller, Winfield S., Fairport.	Reynolds, R. C., Pittsford.
Hovey, B. L., Rochester.	

NIAGARA COUNTY.

Clark, S. T., Lockport.

ONTARIO COUNTY.

Allen, D. S., Hall's Corners.	Smith, J. T., Canandaigua.
Allen, James H., Gorham.	Vanderhoof, F. D., Phelps.

ORLEANS COUNTY.

Bailey, William C., Albion.	Chapman, James, Medina.
Barnum, E. E., Waterport.	

STEBEN COUNTY.

Ellison, M. D., Canisteo.	Jamison, John S., Hornellsville.
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WAYNE COUNTY.

Arnold, J. N., Clyde.	Sayers, Alexander, Marion.
Colvin, Darwin, Clyde.	Sprague, J. A., Williamson.
Pomeroy, C. G., Newark.	

WYOMING COUNTY.

Baker, Milan, Warsaw.	Ellinwood, A. J., Attica.
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FIFTH DISTRICT.

DUTCHESS COUNTY.

Barnes, Edwin, Pleasant Plains.	Pultz, M. T., Stanfordville.
Bayley, Guy Carlton, Poughkeepsie.	Van Wyck, R. C., Hopewell Junction.
Fletcher, O. L., Wing's Station.	Young, John, Fishkill-on-Hudson.
Porteous, J. G., Poughkeepsie.	

KINGS COUNTY.

Baker, G. W., Brooklyn.	Paine, Arthur R., Brooklyn.
Brundage, Amos H., Brooklyn.	Partridge, Charles C., Brooklyn.
Conway, John Francis, Brooklyn.	Pray, S. R., Brooklyn.
Hutchison, Joseph O., Brooklyn.	Rushmore, J. D., Brooklyn.
Leighton, N. W., Brooklyn.	Russell, W. G., Brooklyn.
Lloyd, T. M., Brooklyn.	Segur, Avery, Brooklyn.
Lung, J. B., Brooklyn.	Squibb, E. H., Brooklyn.
McCollom, William, Brooklyn.	Squibb, E. R., Brooklyn.
Minard, E. J. C., Brooklyn.	Thayer, W. Henry, Brooklyn.
Murray, S. J., Brooklyn.	Williams, W. H., Brooklyn.
North, Nelson L., Brooklyn.	

NEW YORK COUNTY.

Allen, S. Busby, New York.	Hinton, John H., New York.
Arnold, E. S. F., New York.	Hodgman, Abbott, New York.
Bathgate, J., Morrisania, New York.	Hubbard, S. T., New York.
Blakeman, W. N., New York.	Janeway, Edward G., New York.
Bozeman, Nathan, New York.	Leale, Charles A., New York.
Bryant, J. D., New York.	Lusk, William T., New York.
Bull, Charles Stedman, New York.	McLeod, S. B. Wylie, New York.
Burchard, T. H., New York.	McLochlin, James A., New York.
Carter, H. Skelton, New York.	McNamara, L. J., New York.
Chauveau, Jean F., New York.	Manley, Thomas H., New York.
Coe, H. C., New York.	Miller, W. T., New York.
Conover, W. S., New York.	Mitchell, H. W., New York.
Curry, Walker, New York.	Murphy, John, New York.
Denison, C. Ellery, New York.	Newman, Robert, New York.
Denison, Ellery, New York.	Oberndorfer, Isidor P., New York.
Dennis, Frederic S., New York.	Parsons, John, New York.
Dent, Emmet C., New York.	Porter, P. Brynberg, New York.
Detmold, William, New York.	Purple, S. S., New York.
Du Bois, Abram, New York.	Ricketts, B. M., New York.
Du Bois, Matthew B., New York.	Smith, J. Lewis, New York.
Eliot, Ellsworth, New York.	Smith, Samuel W., New York.
Flint, Austin, New York.	Smith, Stephen, New York.
Flint, Austin, Jr., New York.	Stephens, Frederick P., New York.
Flint, W. H., New York.	Taylor, Isaac E., New York.
Franklin, Thomas M., New York.	Thomas, T. Gaillard, New York.
Furman, Guido, New York.	Tyler, Hoell, New York.
Garrish, J. P., New York.	Wallach, Joseph G., New York.
Gouley, J. W. S., New York.	White, Whitman V., New York.
Griswold, Gaspar, New York.	White, William T., New York.
Hamilton, Frank H., New York.	Whitehorne, Edward E., New York.
Harrison, George T., New York.	Wood, Charles S., New York.
Hills, S. Augden, New York.	Young, William, New York.

ORANGE COUNTY.

Eager, William B., Middletown.

PUTNAM COUNTY.

Murdock, G. W., Cold Springs.

QUEENS COUNTY.

Burns, William J., Roslyn.

Webb, Edwin, Hempstead.

Davidson, John, Hempstead.

RICHMOND COUNTY.

Carrol, A. L., New Brighton.

ROCKLAND COUNTY.

Govan, W., Stony Point.

SUFFOLK COUNTY.

Banks, George B., Huntington. Chambers, M. L., Port Jefferson.

SULLIVAN COUNTY.

Munson, J. A., Grahamville. Purdy, Isaac, Mongaup Valley.

ULSTER COUNTY.

Chambers, Jacob, Kingston. Van Hoevenberg, H., Kingston.
Hoorneck, Philip D. B., Wawarsing. Ward, Stanley M., Ellenville.

WESTCHESTER COUNTY.

Brush, E. F., Mount Vernon. Lyons, G. A., New Rochelle.
Collins, Isaac G., Sing Sing. Schmid, H. Ernest, White Plains.
Furman, J. Henry, Tarrytown. Southworth, R. J., Yonkers.
Huntington, H. K., New Rochelle. Wells, William L., New Rochelle.
Husted, N. C., Tarrytown.

SUMMARY, BY DISTRICTS, OF FELLOWS IN ATTENDANCE.

First District.....	14
Second District.....	35
Third District.....	34
Fourth District.....	43
Fifth District.....	116
Total.....	<hr/> 242

DELEGATES FROM OTHER ASSOCIATIONS AND INVITED GUESTS IN ATTENDANCE.

MEDICAL SOCIETY OF THE STATE OF CONNECTICUT.

W. C. WILE, M. D., SANDY HOOK, . . . Connecticut.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

W. B. ATKINSON, M. D., PHILADELPHIA, . . . Pennsylvania.

BENJAMIN LEE, M. D., " . . . "

HENRY H. SMITH, M. D., " . . . "

J. V. SHOEMAKER, M. D., " . . . "

MEDICAL SOCIETY OF THE STATE OF VERMONT.

S. S. CLARK, M. D., ST. ALBANS, . . . Vermont.

E. F. UPHAM, M. D., WEST RANDOLPH, . . . "

INVITED GUESTS IN ATTENDANCE.

CHARLES D. ALTON, M. D., HARTFORD, . . . Connecticut.

S. G. HUBBARD, M. D., NEW HAVEN, . . . "

M. C. WHITE, M. D., " . . . "

A. T. P. GARNETT, M. D., WASHINGTON, . . . District of Columbia.

H. B. RANSOM, M. D., BURLINGTON, . . . Iowa.

W. C. B. FIFIELD, M. D., BOSTON, . . . Massachusetts.

H. B. OSBORN, M. D., KALAMAZOO, . . . Michigan.

S. Z. EARLE, M. D., ST. JOHN, . . . New Brunswick.

THOS. WALKER, M. D., " . . . "

T. R. VARICK, M. D., JERSEY CITY, . . . New Jersey.

J. SOLIS COHEN, M. D., PHILADELPHIA, . . . Pennsylvania.

R. A. CLEEMANN, M. D., " . . . "

S. W. GROSS, M. D., " . . . "

JOHN M. KEATING, M. D., " . . . "

GEORGE McCLELLAN, M. D., " . . . "

CHAS. B. NANCREDE, M. D., " . . . "

JOHN H. PACKARD, M. D., " . . . "

WM. H. PANCOAST, M. D., " . . . "

E. O. SHAKESPEARE, M. D., " . . . "

J. H. BAXTER, M. D., UNITED STATES ARMY.

THOS. McPARLIN, M. D., " "

E. H. GREEN, M. D., UNITED STATES NAVY.

GEORGE PECK, M. D., " "

J. C. SPEAR, M. D., " "

OFFICERS AND COUNCIL FOR 1885-'86.

PRESIDENT.

E. M. MOORE, M. D., Rochester, Monroe County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, WILLIAM GILLIS, M. D., Franklin County.

SECOND DISTRICT, H. C. VAN ZANDT, M. D., Schenectady County.

THIRD DISTRICT, FREDERICK HYDE, M. D., Cortland County.

FIFTH DISTRICT, *DESAULT GUERNSEY, M. D., Dutchess County.

RECORDING SECRETARY.

CALEB GREEN, M. D., Homer, Cortland County.

CORRESPONDING AND STATISTICAL SECRETARY.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

TREASURER.

JOHN H. HINTON, M. D., No. 41 West Thirty-second Street, N. Y. City.

MEMBER OF THE COUNCIL AT LARGE.

JOHN SHRADY, M. D., New York City.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, E. M. LYON, M. D.,

Clinton County, term expires 1886.

“ “ IRA H. ABELL, M. D.,

Jefferson County, term expires 1887.

SECOND DISTRICT, ROBERT C. McEWEN, M. D.,

Saratoga County, term expires 1886.

“ “ THOMAS WILSON, M. D.,

Columbia County, term expires 1887.

* Dr. Guernsey died December 9th, 1885, and Dr. J. G. Porteous, of Dutchess County, was elected by the Council to fill the vacancy.

- THIRD DISTRICT, GEORGE W. AVERY, M. D.,
Chenango County, term expires 1886.
“ “ F. W. ROSS, M. D.,
Chemung County, term expires 1887.
FOURTH DISTRICT, DARWIN COLVIN, M. D.,
Wayne County, term expires 1886.
“ “ SIMEON T. CLARK, M. D.,
Niagara County, term expires 1887.
FIFTH DISTRICT, J. W. S. GOULEY, M. D.,
New York County, term expires 1886.
“ “ E. S. F. ARNOLD, M. D.,
New York County, term expires 1887.



OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1886.

FIRST OR NORTHERN BRANCH.

The Second Annual Meeting will be held at Little Falls, Herkimer County, on the second Tuesday in July, 1886.

OFFICERS.

PRESIDENT, WILLIAM GILLIS, M. D., Fort Covington, Franklin County.
SECRETARY, WILBUR H. BOOTH, M. D., Utica, Oneida County.

EXECUTIVE COMMITTEE.

L. C. DODGE, M. D., Rouse's Point, Clinton County.
E. F. EDGERLY, M. D., Moriah Center, Essex County.
WILLIAM GILLIS, M. D., Fort Covington, Franklin County.
THOMAS McGANN, M. D., Wells, Hamilton County.
JOHN P. SHARER, M. D., Little Falls, Herkimer County.
IRA H. ABELL, M. D., Antwerp, Jefferson County.
ALBERT A. JOSLIN, M. D., Greig, Lewis County.
G. ALDER BLUMER, M. D., Utica, Oneida County.
BYRON DE WITT, M. D., Oswego, Oswego County.
JAMES FERGUSON, M. D., Glens Falls, Warren County.

SECOND OR EASTERN BRANCH.

The Second Annual Meeting will be held at Troy, Rensselaer County, on the fourth Tuesday in June, 1886.

OFFICERS.

PRESIDENT, H. C. VAN ZANDT, M. D.,
Schenectady, Schenectady County.
SECRETARY, GEORGE E. McDONALD, M. D.,
Schenectady, Schenectady County.

EXECUTIVE COMMITTEE.

R. H. SABIN, M. D., West Troy, Albany County.
 THOMAS WILSON, M. D., Claverack, Columbia County.
 C. R. BLAKE, M. D., Northville, Fulton County.
 ROBERT SELDEN, M. D., Catskill, Greene County.
 EZRA GRAVES, M. D., Amsterdam, Montgomery County.
 M. H. BURTON, M. D., Troy, Rensselaer County.
 TABOR B. REYNOLDS, M. D., Saratoga Springs, Saratoga County.
 S. G. DE LA MATER, M. D., Duaneburg, Schenectady County.
 H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
 F. J. HINDS, M. D., Salem, Washington County.

THIRD OR CENTRAL BRANCH.

The Second Annual Meeting will be held at Binghamton, Broome County, on the second Thursday in June, 1886.

OFFICERS.

PRESIDENT, FREDERICK HYDE, M. D., Cortland, Cortland County.
 SECRETARY, CHARLES W. BROWN, M. D., Elmira, Chemung County.

EXECUTIVE COMMITTEE.

C. B. RICHARDS, M. D., Binghamton, Broome County.
 WILLIAM R. LAIRD, M. D., Auburn, Cayuga County.
 GEORGE W. AVERY, M. D., Norwich, Chenango County.
 F. W. ROSS, M. D., Elmira, Chemung County.
 H. O. JEWETT, M. D., Cortland, Cortland County.
 O. M. ALLABEN, M. D., Margaretville, Delaware County.
 GILBERT BIRDSALL, M. D., North Brookfield, Madison County.
 A. D. HEAD, M. D., Syracuse, Onondaga County.
 J. K. LEANING, M. D., Fly Creek, Otsego County.
 B. T. SMELZER, M. D., Havana, Schuyler County.
 ELIAS LESTER, M. D., Seneca Falls, Seneca County.
 R. W. EASTMAN, M. D., Berkshire, Tioga County.
 JOHN M. FARRINGTON, M. D., Trumansburgh, Tompkins County.

FOURTH OR WESTERN BRANCH.

The Second Annual Meeting will be held at Buffalo, Erie County, on the second Tuesday in May, 1886.

OFFICERS.

PRESIDENT, E. M. MOORE, M. D., Rochester, Monroe County.
 SECRETARY, WILLIAM H. THORNTON, M. D., Buffalo, Erie County.

EXECUTIVE COMMITTEE.

B. C. WAKELY, M. D., Angelica, Allegany County.
 O. A. TOMPKINS, M. D., East, Randolph, Cattaraugus County.
 WILLIAM CHACE, M. D., Mayville, Chautauqua County.
 JOHN CRONYN, M. D., Buffalo, Erie County.
 A. P. JACKSON, M. D., Oakfield, Genesee County.
 R. J. MENZIE, M. D., Caledonia, Livingston County.
 B. L. HOVEY, M. D., Rochester, Monroe County.
 SIMEON T. CLARK, M. D., Lockport, Niagara County.
 JAMES H. ALLEN, M. D., Gorham, Ontario County.
 JAMES CHAPMAN, M. D., Medina, Orleans County.
 JOHN S. JAMISON, M. D., Hornellsville, Steuben County.
 C. G. POMEROY, M. D., Newark, Wayne County.
 MILAN BAKER, M. D., Warsaw, Wyoming County.
 DAVID M. SMITH, M. D., Penn Yan, Yates County.

FIFTH OR SOUTHERN BRANCH.

The Second Annual Meeting will be held in Brooklyn, Kings County, on the fourth Tuesday in May, 1886.

OFFICERS.

* PRESIDENT, DESAULT GUERNSEY, M. D., Amenia, Dutchess County.
 SECRETARY, E. H. SQUIBB, M. D., Brooklyn, Kings County.

EXECUTIVE COMMITTEE.

JOHN YOUNG, M. D., Fishkill-on-Hudson, Dutchess County.
 WILLIAM McCOLLOM, M. D., Brooklyn, Kings County.
 P. BRYNBERG PORTER, M. D., New York, New York County.
 WILLIAM B. EAGER, M. D., Middletown, Orange County.
 WILLIAM YOUNG, M. D., Cold Spring, Putnam County.
 EDWIN WEBB, M. D., Hempstead, Queens County.
 F. U. JOHNSTON, M. D., New Brighton, Richmond County.
 WILLIAM GOVAN, M. D., Stony Point, Rockland County.
 W. D. WOODEND, M. D., Huntington, Suffolk County.
 † ISAAC PURDY, M. D., Mongaup Valley, Sullivan County.
 H. VAN HOEVENBERG, M. D., Kingston, Ulster County.
 N. C. HUSTED, M. D., Tarrytown, Westchester County.

* Dr. J. G. Porteous was appointed by the Council, December, 1885, to fill the vacancy caused by the death of Dr. Guernsey.

† Dr. Isaac Purdy died December 6, 1885, and Dr. Thomas W. Bennett, Jeffersonville, Sullivan County, was elected to fill vacancy.

LIST OF FELLOWS IN ATTENDANCE AT THE
SECOND ANNUAL MEETING IN NEW YORK CITY,

Held November 17, 18, 19, and 20, 1885.

FIRST DISTRICT.

CLINTON COUNTY.

Dodge, L. C., Rouse's Point.

ESSEX COUNTY.

Sawyer, Conant, Au Sable Forks.

FRANKLIN COUNTY.

Gillis, William, Fort Covington.

HERKIMER COUNTY.

Garlock, W. D., Little Falls.

Sharer, John P., Little Falls.

Green, H. H., Paine's Hollow.

Young, John D., Starkville.

JEFFERSON COUNTY.

Abell, Ira H., Antwerp.

Johnson, P. H., Adams.

ONEIDA COUNTY.

Baker, Smith, Whitesborough.

Gray, John P., Utica.

Brush, E. N., Utica.

Porter, H. N., New York Mills.

Dodge, Amos P., Oneida Castle.

Reid, C. C., Rome.

WARREN COUNTY.

Ferguson, James, Glens Falls.

Martine, G. R., Glens Falls.

SECOND DISTRICT.

ALBANY COUNTY.

Bailey, Theodore P., Albany.

Peters, Samuel, Cohoes.

Hall, John E., Green Island.

Sabin, W. B., West Troy.

Moore, J. W., Cohoes.

COLUMBIA COUNTY.

Benham, J. C., Hudson. Wilson, Thomas, Claverack.
Lockwood, Jordan W., Philmont.

FULTON COUNTY.

Blake, C. R., Northville. De Zouche, Isaac, Gloversville.

GREENE COUNTY.

Conkling, George, Durham. Selden, Robert, Catskill.

MONTGOMERY COUNTY.

French, S. H., Amsterdam. Robb, William H., Amsterdam.

RENSSELAER COUNTY.

Allen, C. S., Greenbush. Harvie, John B., Troy.
Burton, Matthew H., Troy. Lester, S. W., Troy.
Ferguson, E. D., Troy. Mitchell, H. E., Troy.
Hannon, J. C., Hoosick Falls. Seymour, W. Wotkins, Troy.

SARATOGA COUNTY.

Babcock, Myron H., Saratoga Sp'gs. Preston, J. R., Schuylerville.
McEwen, R. C., Saratoga Springs. Reynolds, Taber B., Saratoga Sp'gs.

SCHENECTADY COUNTY.

De La Mater, S. G., Duaneburgh. Reagles, J. R., Schenectady.
Ennis, Alexander, Pattersonville. Van Zandt, H. C., Schenectady.
McDonald, G. E., Schenectady.

WASHINGTON COUNTY.

Lambert, John, Salem.

THIRD DISTRICT.

BROOME COUNTY.

Orton, John G., Binghamton. Putnam, F. W., Binghamton.

CAYUGA COUNTY.

McDonald, Carlos F., Auburn.

CHEMUNG COUNTY.

Brown, C. W., Elmira. Squire, C. L., Elmira.
Ross, F. W., Elmira.

CHENANGO COUNTY.

Avery, G. W., Norwich. Lyman, H. C., Sherburne.
Brooks, Leroy J., Norwich.

CORTLAND COUNTY.

Green, Caleb, Homer.	Jewett, H. O., Cortland.
Hyde, Frederick, Cortland.	Knapp, John H., Harford.
Hendrick, H. C., McGrawville.	

DELAWARE COUNTY.

Morrow, W. B., Walton.	Smith, G. C., Delhi.
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MADISON COUNTY.

Carpenter, H. W., Oneida.	Cavana, Martin, Oneida.
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ONONDAGA COUNTY.

Aberdein, Robert, Syracuse.	Head, Adelbert D., Syracuse.
Dallas, A. J., Syracuse.	Jacobson, Nathan, Syracuse.
Didama, H. D., Syracuse.	Kneeland, Jonathan, S. Onondaga.
Frazee, A. Blair, Elbridge.	Saxer, L. A., Syracuse.
Gillett, C. A., Syracuse.	Van De Warker, Ely, S. Syracuse.

OTSEGO COUNTY.

Hills, Lyman H., Cooperstown.	Leaning, J. K., Fly Creek.
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SENECA COUNTY.

Lester, Elias, Seneca Falls.	Seaman, Frank G., Seneca Falls.
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TOMPKINS COUNTY.

Fitch, William, Dryden.	Farrington, John M., Trumansburg.
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FOURTH DISTRICT.

ALLEGANY COUNTY.

Wakely, B. C., Angelica.

CHAUTAUQUA COUNTY.

Ames, Edward, Sherman.	Dean, A. J., Brockton.
Chace, William, Maysville.	Strong, T. D., Westfield.
Darling, F. B., Westfield.	

ERIE COUNTY.

Andrews, J. B., Buffalo.	Heath, W. H., Buffalo.
Barker, A. M., Buffalo.	Murray, W. D., Tonawanda.
Briggs, Albert H., Buffalo.	Rochester, T. F., Buffalo.
Cronyn, John, Buffalo.	Stockton, C. G., Buffalo.
Daniels, C. M., Buffalo.	Thornton, W. H., Buffalo.
Fell, G. E., Buffalo.	Tremaine, W. S., Buffalo.
Greene, Joseph C., Buffalo.	

GENESEE COUNTY.

Jackson, A. P., Oakfield.	Sprague, W. B., Pavilion.
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LIVINGSTON COUNTY.

Menzie, R. J., Caledonia. Moyer, Frank H., Moscow.

MONROE COUNTY.

Buckley, C., Rochester. McDougall, W. D., Spencerport.
 Buckley, James, Rochester. Moore, E. M., Rochester.
 Fuller, Winfield S., Fairport. O'Hare, T. A., Rochester.
 Hovey, B. L., Rochester.

NIAGARA COUNTY.

Clark, S. T., Lockport. Huggins, W. Q., Sanborn.

ONTARIO COUNTY.

Vanderhoof, F. D., Phelps.

ORLEANS COUNTY.

Curties, D., Jeddo. Tompkins, H. C., Knowlesville.

STEUBEN COUNTY.

Jamison, John S., Hornellsville. Perry, N. M., Troupsburg.

WAYNE COUNTY.

Colvin, Darwin, Clyde. Pomeroy, C. G., Newark.
 Landon, N. E., Newark.

WYOMING COUNTY.

Lusk, Z. J., Warsaw.

FIFTH DISTRICT.

DUTCHESS COUNTY.

Barnes, Edwin, Pleasant Plains. Sutton, G. L., East Fishkill.
 Cramer, W., Poughkeepsie. Van Wyck, R. C., Hopewell Junct.
 Guernsey, Desault, Amenia. Young, John, Fishkill.
 Porteous, J. G., Poughkeepsie.

KINGS COUNTY.

Baker, G. W., Brooklyn. North, Nelson L., Brooklyn.
 Bell, A. N., Brooklyn. Pray, S. R., Brooklyn.
 Benton, S. H., Brooklyn. Ransom, H. B., Brooklyn.
 Conway, J. F., Brooklyn. Rochester, T. M., Brooklyn.
 Creamer, Joseph, Brooklyn. Rushmore, J. D., Brooklyn.
 Feeley, James F., Brooklyn. Russell, W. G., Brooklyn.
 Gardiner, W. F., Brooklyn. Sizer, N. B., Brooklyn.
 Hutchison, Joseph C., Brooklyn. Squibb, E. H., Brooklyn.
 Leighton, N. W., Brooklyn. Steinke, C. O. H., Brooklyn.
 Lloyd, T. M., Brooklyn. Sullivan, J. D., Brooklyn.
 Lung, J. B., Brooklyn. Thayer, W. H., Brooklyn.
 McCollom, W., Brooklyn. Wieber, G., Brooklyn.
 Minard, E. J. C., Brooklyn. Wyckoff, R. M., Brooklyn.
 Murray, S. J., Brooklyn.

NEW YORK COUNTY.

Allen, S. Busby, New York.	Hinton, John H., New York.
Allen, T. H., New York.	Hubbard, Oliver P., New York.
Arnold, E. S. F., New York.	Hubbard, Samuel T., New York.
Arnold, Glover C., New York.	Janeway, E. J., New York.
Bathgate, James, Tremont.	Jenkins, W. T., New York.
Biggs, H. M., New York.	Leale, Charles A., New York.
Blakeman, W. N., New York.	Lusk, W. T., New York.
Bozeman, Nathan, New York.	Lynch, P. J., New York.
Bryant, Joseph D., New York.	Manley, T. H., New York.
Buchanan, Alexander, New York.	McLeod, S. B. W., New York.
Bull, C. S., New York.	McLochlin, J. A., New York.
Clark, Alonzo, New York.	McNamara, L. J., New York.
Conover, W. S., New York.	Meier, G. C. H., New York.
Conway, J. R., Jr., New York.	Newman, Robert, New York.
Denison, Ellery, New York.	Oberndorfer, I. P., New York.
Dennis, F. S., New York.	Palmer, E. J., New York.
Detmold, W., New York.	Parsons, John, Kingsbridge.
Du Bois, Abram, New York.	Porter, P. Brynberg, New York.
Dudley, A. P., New York.	Purple, Samuel S., New York.
Eliot, Ellsworth, New York.	Roth, Julius A., New York.
Flint, Austin, New York.	Ruggles, A. D., New York.
Flint, Austin, Jr., New York.	Sanders, E., New York.
Flint, W. H., New York.	Sayre, Lewis A., New York.
Franklin, T. M., Blackwell's Island.	Sayre, Lewis H., New York.
Furman, Guido, New York.	Sayre, Reginald H., New York.
Garrish, John P., New York.	Shrady, John, New York.
Goldthwaite, H., New York.	Smith, J. Lewis, New York.
Gouley, J. W. S., New York.	Smith, S. W., New York.
Grauer, Frank, New York.	Taylor, Isaac E., New York.
Griswold, Gaspar, New York.	Wallach, J. G., New York.
Hamilton, Frank H., New York.	Ward, C. S., New York.
Harrison, G. T., New York.	White, William T., New York.
Hartman, Jacob, New York.	Wood, Charles S., New York.
Hills, S. Augden, New York.	

ORANGE COUNTY.

Eager, W. B., Middletown.

QUEENS COUNTY.

Burns, W. J., Roslyn.

Webb, Edwin, Hempstead.

RICHMOND COUNTY.

Carroll, A. L., New Brighton.

Johnston, F. U., New Brighton.

ROCKLAND COUNTY.

Govan, W., Stony Point.

Stevenson, W. G., Nyack.

SUFFOLK COUNTY.

Banks, G. B., Huntington.	Lindsay, W., Huntington.
Hamill, E. H., Islip.	Woodend, W. D., Huntington.
Hulse, W. A., Bay Shore.	

SULLIVAN COUNTY.

De Kay, W. H., Parksville.	Purdy, Isaac, Mongaup Valley.
Munson, J. A., Grahamsville.	

ULSTER COUNTY.

Chambers, J., Kingston.	Hühne, F., Rondout.
Hoornbeck, P. DuBois, Wawarsing.	Van Hoevenberg, H., Kingston.

WESTCHESTER COUNTY.

Brush, E. F., Mt. Vernon.	Lyons, G. A., New Rochelle.
Collins, I. G., Sing Sing.	Southworth, R. J., Yonkers.
Furman, J. H., Tarrytown.	Wells, W. L., New Rochelle.
Husted, N. C., Tarrytown.	

SUMMARY, BY DISTRICTS, OF FELLOWS IN ATTENDANCE.

First District.....	17
Second District	32
Third District... ..	34
Fourth District.....	41
Fifth District.....	127
Total.....	<hr/> 251

DELEGATES FROM OTHER ASSOCIATIONS AND INVITED GUESTS IN ATTENDANCE.

MEDICAL SOCIETY OF THE STATE OF CONNECTICUT.

CURTIS H. BILL, M. D., BRIDGEPORT,	Connecticut.
STEPHEN G. HUBBARD, M. D., NEW HAVEN, . .	"
WILLIAM C. WILE, M. D., NEWTON,	"

MEDICAL SOCIETY OF THE STATE OF DELAWARE.

J. A. STEVENS, M. D., LINCOLN,	Delaware.
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MEDICAL SOCIETY OF THE STATE OF MASSACHUSETTS.

GEORGE C. SHATTUCK, M. D., BOSTON,	Massachusetts.
HENRY W. WILLIAMS, M. D., BOSTON,	"

MEDICAL SOCIETY OF THE STATE OF NEW JERSEY.

CHARLES H. ANDRUS, M. D., METUCHEN,	New Jersey.
JOHN G. RYERSON, M. D., BOONTON,	"

ADDRESS OF WELCOME AND REPORT OF THE COMMITTEE OF ARRANGEMENTS.

By JOHN W. S. GOULEY, M. D., of New York County,
Chairman of the Committee.

November 17, 1885.

GENTLEMEN: The Fellows of New York County welcome you heartily to this city, and to the second annual meeting of the New York State Medical Association, which opens under most favorable auspices, such as a very considerable accession of membership, with every indication of a corresponding numerical addition of attendants, and a marked increase in the number of scientific contributions.

The programme, which you have already received, shows that, besides the morning addresses and the many essays on various medical topics, this year's proceedings will consist of a discussion which will occupy one night session. It is hoped that similar discussions will become a part of every year's work, and a subject or subjects for discussion may hereafter be announced one year in advance, in order that the participants may have ample time for preparation.

The topic of to-night's discussion will be presented by Dr. Austin Flint, of New York County, who will read a paper in which he propounds eight questions relative to the nature, pathology, prognosis, and treatment of acute lobar pneumonia. The Fellows who have agreed to take part in the discussion will present in writing their answers to these eight questions. Afterward, general discussion of the entire subject, or of any particular point or points made in any of the several answers, will be in order; that is, if time permit.

On account of the great amount of scientific work mapped out in the programme, the whole of the fourth day will be devoted to the reading and discussion of papers, and that day's sessions will be held in the lecture-room of the Carnegie Laboratory.

It is suggested: 1. That all papers announced in the programme take precedence over those offered at the beginning of, or during, the sessions; 2. That the author of each paper register his name in a book kept for the purpose by the Committee on Scientific Contributions, and make known to the Chairman of that committee the time he requires to read his paper; 3. That, should the list of papers at any session be exhausted before the time for adjournment, papers announced for the session following may be called up; and 4. That the author of each paper should transmit it, as soon as read, to the Chairman of the Committee on Scientific Contributions. The object of this measure is to prevent delay in the publication of the Transactions of the Association, the principal cause of delay being failure on the part of authors of papers to send their manuscripts promptly to the Publishing Committee.

The summary of the papers to be presented at this meeting is as follows: Four addresses and forty-five papers are announced in the programme, and the titles of four papers have been sent to the Committee since the publication of the programme. These fifty-three contributions come from the five geographical districts of the State, in the following proportions:

The First District sends	.	.	.	.	2
" Second " "	.	.	.	.	10
" Third " "	.	.	.	.	7
" Fourth " "	.	.	.	.	12
" Fifth " "	.	.	.	.	22
					<hr/> 53

In these five districts, Fellows of the Association from twenty-one counties have contributed papers in the following proportions:

Second District, Albany County	.	.	.	3
Third " Cayuga	"	.	.	1
Third " Chemung	"	.	.	1
Third " Cortland	"	.	.	1
Fourth " Erie	"	.	.	6
Second " Fulton	"	.	.	1
Second " Greene	"	.	.	1
Fifth " Kings	"	.	.	3
Fourth " Monroe	"	.	.	3
Fifth " New York	"	.	.	16
Fourth " Niagara	"	.	.	2
Third " Onondaga	"	.	.	2
First " Oneida	"	.	.	2
Third " Otsego	"	.	.	1
Fifth " Queens	"	.	.	1
Second " Rensselaer	"	.	.	4
Fifth " Richmond	"	.	.	1
Second " Schenectady	"	.	.	1
Fourth " Steuben	"	.	.	1
Fifth " Sullivan	"	.	.	1
Third " Tompkins	"	.	.	1
				<hr/> 53

The fifty-three scientific contributions, including the four addresses, to be presented this year, may be classified, as regards their subject matter, as follows:

19	are on	Surgery.
11	"	Medicine.
9	"	Obstetrics and Gynæcology.
5	"	Materia Medica and Therapeutics.
2	"	Hygiene.
2	"	State Medicine.
1	is on	Physiology.
1	"	Pathology.
1	"	Toxicology.
1	"	Ophthalmology.
1	"	Insanity.

In addition to the fifty-three papers just enumerated and classified, fifteen essays will be presented at the night session of the first day, in answer to the eight questions propounded on the subject of pneumonia, making a total of sixty-eight scientific contributions to be considered by you during the sessions of this meeting.

The arrangements for the discussion on pneumonia entailed a considerable amount of correspondence which was directed to all parts of the State, for it was considered desirable to introduce into this discussion the views of members of the profession who are geographically widely separated from each other, of those who have had a large field of observation and long years of experience, and also of the younger element of the profession. The Committee regrets that Fellows from one of the districts failed to come forward.

The fifteen answers come from the following districts :

The Second District sends	.	.	.	.	2
" Third " "	.	.	.	.	4
" Fourth " "	.	.	.	.	4
" Fifth " "	.	.	.	.	5
					<hr/> 15

In these four districts Fellows of the Association from nine counties have contributed essays, in answer to the eight questions, in the following proportions :

Third District, Broome	County	.	.	1
Third " Chemung	"	.	.	1
Fourth " Erie	"	.	.	2
Fourth " Monroe	"	.	.	1
Second " Montgomery	"	.	.	1
Fifth " New York	"	.	.	5
Fourth " Niagara	"	.	.	1
Third " Onondaga	"	.	.	2
Second " Rensselaer	"	.	.	1
				<hr/> 15

In comparing the first two years' work it is found that the sum total of papers for last year was fifty, while this year it is fifty-three, and the additional fifteen papers in answer to the eight questions propounded on the subject of pneumonia make an increase of fourteen over last year.

The scientific contributions come this year from twenty-one counties, while last year's contributions were from only fifteen.

There is also an increase in the range of subjects treated. Last year the number was seven ; this year it is eleven.

There was last year some delay in the registration of Fellows. On this account the Committee of Arrangements has appointed for this meeting a sub-Committee on Registration, with a chairman. In conformity with the by-laws, one member of the regular Committee on Registration will be in constant attendance, and will be assisted by this sub-Committee in his endeavor to expedite the work of registration. There is a register provided for each district, so that five Fellows can now register their names in the same space of time that was occupied by one Fellow at the first meeting of the Association. The Fellows will be furnished with blanks for registering their names and post-office addresses, and, after the meeting, these blanks so filled may be bound together in alphabetical order as the official register of the Association.

The Committee of Arrangements recommends that the Fellows wear, as a token of having registered their names in the official register of the Association, a strip of golden yellow ribbon in the upper button-hole of the left lapel of their coats, that the delegates wear a similar strip, but of blue and yellow, and the invited guests a strip of red and yellow. The object of this is to expedite registration, and at the same time to indicate to the presiding officer those who have a right to speak in the meeting. This plan was suggested by the following, which is extracted from section 6, article II, of the by-laws :

“ . . . No Fellow whose dues and assessments have not been paid in full shall be entitled to participate in any way in the proceedings of the Association, nor shall he be a candidate for any office in the Association. . . . ”

PRESIDENT'S ANNUAL ADDRESS.—RELATIONS OF THE STATE TO MEDICAL SCIENCE.

By JOHN P. GRAY, M. D., of Oneida County.

November 17, 1885.

AMONG the important functions of the State is that of securing education to the body of the people. This is both a moral duty as well as a principle of polity. The educational policy of the State of New York is confined chiefly to the maintenance and supervision of the system of common schools for primary education, and of normal schools for the education of teachers for these same common schools, through the agency of its Board of Regents. The State also exercises a fostering supervision over the higher educational institutions, including the colleges and academies which are established and maintained by private funds and endowments. The charters of our universities, colleges, and academies emanate from the Board of Regents, and may be altered or amended through its agency. To this body, also, is intrusted the distribution of the so-called literature fund of the State, and of the proceeds of the United States deposit fund, which are appropriated by law for the benefit of the academical institutions, both public and private. The Board of Regents does not attempt to interfere with the internal management, methods, or discipline of these private educational institutions, except when appealed to for that purpose. It concedes to them and their trustees the complete control over their funds and earnings; confers upon them the power of granting diplomas, and awards to them all the privileges and powers, except in the matter of support, that would enure to them if they were a part of the public educational system of the State.

Beyond this, the State has transferred grants of land of the United States domain, for educational purposes, to Cornell University, that institution acting as trustee in the public use of these funds, while all other colleges in the State stand upon their own endowments and resources, as corporations whose trustees discharge their duties and responsibilities in the care of funds the same as in other trusts under statutory provisions.

Schools for *special* education, such as law and medical schools, theological seminaries, polytechnic institutions for teaching mechanics and engineering, schools of mines, institutes of technology, business colleges, etc., are, like the colleges for higher learning, conducted as corporations sustained by private contributions and earnings, or exist as individual private enterprises. These schools, as above designated, receive no privileges or grants from the State, but are sustained wholly by those who voluntarily seek their advantages, and by the munificence of private citizens.

What, then, should be the proper limits of legislative interference in this class of institutions, representing scientific education and research, is a proper inquiry. Whether the State should undertake such a function of education as a public measure is a problem in political economy which, as far as New York is concerned, for the present at least, is answered adversely.

Medical colleges do not ask pecuniary assistance of the State, and they have not only sustained themselves, but have steadily grown in property rights and educational facilities, and have developed a constantly increasing corps of instructors and widened the scope of scientific research. The medical colleges of the city of New York have so commended themselves in their services to the public in educating young men, that that city has become a great center of medical learning, not only in didactic instructions, but in all resources for practical, clinical study and scientific investigation.

Within a year a private citizen, Mr. Andrew Carnegie, has presented fifty thousand dollars to Bellevue Hospital Medical College for a suitable building, with conveniences for pathological research, which has been erected. Mr. William H. Van-

derbilt, a private citizen, has given half a million of dollars to the College of Physicians and Surgeons of New York, to erect suitable buildings, and place that institution on an independent footing.

That Johns Hopkins University should have to come to New York for a teacher of pathology—one of the most difficult fields of scientific work—and did select a young man developed in Bellevue College, is no mean compliment to the system and thoroughness of instruction in the metropolitan schools.

The text-books of which the professors of these schools are authors are among the standard works in all departments of medical practice throughout the land, and stand in the front rank wherever medical science is taught and practiced.

The number of students in the several medical colleges of New York city for the past five years has averaged about fifteen hundred, not gathered from the State of New York alone, but far more largely from other States and countries. Taking a single instance, in 1884-'85, in one of the schools (Bellevue), there were three hundred and sixty-five matriculants, but only ninety-five of these were from New York, and of one hundred and thirty-four graduates but twenty-three were from the State of New York.

It would seem, then, as if there were no immediate call for legislative interference in the interest of medical schools, or for the advancement of medical science, or, indeed, to maintain the honor of the medical profession, or, the most important of all, to secure the highest good of the people of the State of New York.

The spontaneous growth of science left untrammelled will undoubtedly advance human interest far more rapidly and surely than if put under governmental supervision. Science is not made; it grows and develops by the action and discerning judgment of individuals in the research into the laws of nature. The government of France did not make or develop Pasteur. His researches were his own—were spontaneous. All that the government did was to afford the opportunity, in the end, for the demonstration and utilization of his vast knowledge and scientific investigations.

The greatest works in medical science, and in science and mechanics generally, have been wrought by men under difficulties, not only without fostering support, but often under antagonisms of power.

While the State has always fostered medical science it has never undertaken the task of organizing or of regulating schools of medicine, or developing what is called by some "State medicine." For instance, it is conceded that medical science can not exist without a knowledge of anatomy—of all the parts of the human structure, and their relations one to another. The State, under certain prescribed limits, grants and legalizes the use, by medical colleges, of human bodies for this public good. It is equally essential to medical science to understand physiology, the function of vital action of each part, their relations to each other and the whole organism, and their functions and limitations in maintaining life. The State permits observation and experimentation on various lower animals in respect of such investigations, as they are essential, and yet dangerous or fatal to human life, and this because of its public utility. Medical science can only be developed and taught successfully by the organized efforts of men through schools or colleges of medicine. The State provides for such organizations under corporate laws, and taxes the property of such colleges as other property is taxed, and this for the public good. The State has so far indorsed medical colleges as to declare that a diploma, or certificate of completion of a course of study prescribed, and a certain degree of efficiency attained in study, shall entitle the possessor to practice the art of medicine as a profession or calling in life, and has established as a guarantee that infringements and willful neglects of such practice, which may result in injury to any one, shall be punished by penalties, in the nature of damages or imprisonments, or both.

While it is not intended to dispute the power of the Legislature to "regulate medical education," and to declare what shall constitute a "doctor in medicine," the fact remains that the Legislature has exercised only that measure of power necessary to foster and protect the interests of advancing medical science,

as has been stated, by giving the best opportunities to the schools for this end, and has maintained, at the same time, as far as possible, the individual freedom of the citizen to seek such special culture as he may see fit to pursue or obtain. Nor has the State undertaken to declare what medical science is, or what the methods of teaching shall be, or what degree of proficiency shall constitute a medical practitioner, nor has the State undertaken to decide as between differing schools of practice, in respect of the theories of science maintained in the various schools, or the merits of either.

The State can not adopt any particular school or system of medicine as against another. This the Legislature has settled by opening the way for all systems, without respect to supposed or real scientific merits, and this is essential in developing a science which is so intimately interwoven with human interests, and in every sense so important to the life of the State. It is the part of wisdom to give the widest latitude to discussion wherever matters of opinion are either opposed or seem to be in conflict. The State has acknowledged the legal equality of graduates of all schools, but exacts evidence of this attainment. For instance, the State authorizes a graduate of any incorporated medical college of the State, who is certified by a judge to be such graduate, and to be of reputable character and a permanent resident of the State, and of at least three years' practice, to be a medical examiner in lunacy, to determine the sanity or insanity of persons who are to be admitted to treatment in State or corporate institutions, or licensed private houses, requiring at the same time that all such medical certificates shall be judicially certified before they can have any legal or binding force.

I use this illustration, because the State could not delegate a higher or more sacred function than that of determining in any individual case whether or not a citizen was or was not in a mental condition demanding the interference of the State for his protection against the disastrous consequences of his disease, if left to himself or to his family. This endowment of physicians with a judicial function is certainly the highest indorsement the State could grant to a profession, and is the most

extreme stretch of delegated power, hence it is very properly placed under the protection and supervision of its judiciary. In other respects, the State has left the culture and development of medical science to the medical profession alone, and has granted the incorporation of societies and associations in order to maintain its unity of work, its honor, and its elevation in character and progress.

It is true that efforts have been made, from time to time, to thwart this beneficent work by invoking legislative interference. For instance, as against vaccination to prevent smallpox; to prevent experiments on the lower animals—a measure so highly essential to the advance of physiology. Happily these schemes have been unsuccessful.

It is conceded as one of the functions of law that the State should guard and foster medical institutions of scientific character because of the services they render to the public, and because, also, of the mutual relations which exist between the administration of justice and the charitable and protective duties which the State assumes over its people. This is illustrated in the calling of the medical profession in accidents, to make *post-mortems* in cases of sudden deaths and in connection with crimes, to make analyses in cases of supposed poisoning and adulteration sometimes of food, to aid in the determination of sanity or insanity of criminals, etc., and, as a still more recent and high illustration, the State has organized and created a Board of Health, at the behest of the profession, to guard and promote the general health as a question of universal hygiene.

In respect of the services of the medical profession to the general public, little need be said. It is a profession, as that of law is, for obtaining a livelihood, and its services are sought for certain ills and misfortunes of men on the same principle as services of other professions—that is, to meet the various needs of society. The State does not compel citizens to call in any practitioner, or any class of practitioners, in case of illness or injuries. It not only authorizes the organization of schools of medicine which may teach special theories and practice, but it allows medicines, with the sole exception of poisons, to be ad-

ministered and sold as common merchandise for administration as remedies for disease by persons who make no pretense to the knowledge of medical science or the art of healing. The State, therefore, may be said to be entirely neutral in respect to the actual practice of medicine and the administration of curative remedies, and it follows that it does not regulate the practice of medicine.

It is true it attaches honor and responsibility to those who offer to practice medicine under the authority of a diploma, as recited, and punishes those who attempt to impose on the public by feigned or forged diplomas to secure confidence or character, but it takes no cognizance of the acts of those who advertise or administer nostrums, whether these are put forth under a real or assumed title of doctor. So then it is evident that the policy of the State is to give the widest latitude and most superficial supervision over this department of its various practical activities.

It has been claimed, as intimated, that the State should not only exercise supervision, but should create an examining body, independent of the schools, and thus practically take away from the corporate schools of medical learning (to which it is to be remembered that the State contributes nothing pecuniarily, and which pay taxes, as any other property) the power of examination of their own pupils, and of granting them certificates of study and proficiency in the form of diplomas. This would indeed be an anomaly in political economy, especially while the State leaves unexamined and unlicensed the commercial dealers in medicines and the itinerant ungraduated doctors. If the State made endowments or contributed to the means and development of medical colleges, there might be some pretext for demanding the exercise of such a function, and particularly if it supervised also commercial medication, and required that bottles or parcels containing so-called medicine should bear on them the ingredients of their contents, and the actual name and calling of the inventor or seller.

It has even been proposed that supervisory power shall be given through the Regents of the University, in the form of

authority to appoint a commission of medical examiners for licensing physicians, practically to supersede the diplomas of the schools. It is noteworthy that such power has never been sought by the Regents themselves. What possible fitness such a commission could have over the present system does not appear. The unworthy accusations made against the teachers in medical schools, that they are influenced by mercenary or other personal motives in examinations and granting of diplomas, and in the indiscriminate maligning of members of the medical profession as incompetents, are surely not to be taken even as plausible pretenses for the establishing of a system the only effect of which could be to degrade the medical colleges of the State. As for the Board of Regents, there is not a medical teacher in it, and but one physician. It consists of nineteen members. In classifying the occupations of the present Board, I find that twelve are lawyers, four are teachers, one a minister, one an editor, and one a physician. Why such a board should *not* extend special supervisory power over the medical colleges to the degree of practically directing its professors in their duties and in the exercise of their judgment as to the efficiency of pupils, beyond what is assumed in the educational institutions of the State, ought "to go without saying."

The English and German governments have been cited as precedents to encourage State interference. The State of New York is not a paternal government, and in the language of the Hon. Charles E. Fitch, himself a Regent of the University, "Government should neither absorb nor exercise any greater powers than will conserve its own safety, and as a corollary to this that it should do nothing that the voluntary principle can accomplish";¹ and thus far the State of New York has acted upon this principle in relation to medical colleges. The English system of examination of medical students for license or diploma may fit well in that form of government, but it does not argue that it would be applicable in this State.

¹ "Education and the State," an address delivered at the Thirty-first annual Meeting of the New York State Teachers' Association at Watkins, New York, July 25, 1876.

Germany surely should not be quoted for us to follow—a country where the whole system of education, including medical affairs, is governmental. Of the twenty-one universities of the German Empire, all have faculties of medicine except the one at Münster, which is devoted exclusively to theology and philosophy. It follows that the professors and teachers in all those institutions are appointed by the Government. But it is also to be stated that there are no special colleges of medicine aside from the state universities in existence in Germany. There would seem to be no propriety in recommending the systems of either country for application in the State of New York.

Here, I repeat, the State Government is not paternal, and the medical colleges are the property of private individuals. The medical students pay for their education. The students, as already stated, are in a large proportion from other States and countries, and come to New York because it is a medical center. Such measures as have been proposed would not only tend to degrade the colleges, but would transfer to Philadelphia and Boston the foreign students and those of other States, as well as a large proportion of the students hailing from different parts of the State itself. It follows, therefore, that the Legislature has been wise and prudent in not concerning itself so much with what it may have the power to do as with what it ought to do and what is expedient for it to do. Guardianship in any way over science is the last remedy to seek, and never should be granted in disregard of liberty of voluntary action, nor should it be made an agent to trammel men or institutions at the behest of those who are seeking for themselves a panacea for real or imaginary ills. What could be more tyrannical or arbitrary than an attempt to compel men to think and act in the same channels in matters of science, the application of which must always be a prerogative of private judgment?

We have substantially stated the relations between medical science and the State of New York. It certainly would not be in the course of bettering matters to put the medical colleges under any ban for any deficiencies or defects not brought about by them. It is through the medical colleges that medical educa-

tion has been steadily advancing. With them it has been a struggle against extreme laxity of public sentiment and indifference as to the elevation and qualifications of medical practitioners. This is seen not in the uneducated classes alone, but quite as largely among the educated, where nostrum vendors and advertising quacks have been patronized and sustained. It needs no argument to show that those who propose to enter the medical profession should have a preliminary education of a higher grade than exists at present, or that the medical colleges may not make improvements in the system of education. We all concede that these desirable reforms are essential for the public good ; but it is not my purpose to discuss these questions even briefly. My predecessor, Dr. Didama, in his address before this body on medical education, pointed out very clearly and plainly certain defects in the system of instruction in our medical colleges, mainly the need of classification of the studies to be pursued ; presenting such a system of classification as would fairly represent the natural evolution of the study of medical science, and which would at the same time be a system which would give efficiency to study by at no time overburdening the student with a multitude of subjects, or confuse him with an attempt to comprehend at the same time lectures which represented the two extremes of what he denominated the natural curriculum. All this, however, needs no legislation. If it is the best method of study it will be adopted, and the elevation of medical education will continue, as it always has done, to come from the colleges themselves.

In conclusion, this is not the time or the occasion to review the efforts of some of our medical teachers to elevate the standard of general and medical education, and the difficulties, embarrassments, and discouragements encountered. This would reveal a chapter of honorable, self-sacrificing professional work, which, although temporarily baffled, must in the end succeed because it is right and attainable. "*In hoc signo vinces.*"

AN ADDRESS ON STATE MEDICINE.

By ALFRED LUDLOW CARROLL, M. D., Secretary of New York State
Board of Health.

Read November 17, 1885.

STATE Medicine, in its most comprehensive sense, embraces all the relations of the medical profession to the public, including in its scope medical jurisprudence, medical education, and sundry international as well as national considerations, in addition to public hygiene. But in popular estimation the term now has a narrower significance, and is applied more especially to the practical administration of sanitary science; to the protection of the public health by legally-constituted effort.

Even with this more limited definition, preventive medicine may present its claim to be regarded as at once the oldest and the most vigorous of the now almost too numerous sisterhood of specialties in our profession. Moses was the prototype of the modern health officer. His minute instructions, put forth under divine sanction in the guise of religious observances, were in reality simply a code of sanitary ordinances suitable for a rural community, which many of our local boards of health might do well to follow. His injunction of circumcision was doubtless intended to prevent balanitis and blennorrhœa, without a prophetic foreknowledge of its prophylactic efficacy against all the reflex neurotic results of "preputial irritation." His introduction of the "dry earth system" was a distinct protest against the abomination of leaching midden-pits and cesspools, although the urban method of paving streets renders his suggestion of "paddles" impracticable in civilized municipalities at the present day; but even in this his supposed invention was in reality

borrowed from the instincts of the lower animals, which, from a time whereof the memory of archæologists runneth not to the contrary, have utilized their sewage without pollution of their water-supply or contamination of the ground atmosphere. It is more than probable that "leprosy" and "plague," in their Scriptural acceptance, were generic terms, comprising not only a number of parasitic and other contagious cutaneous disorders, but also what we now euphemistically call "specific" disease; and it is quite certain that the Israelitish leader anticipated some of the most modern theories as to isolation, disinfection, and antisepsis. Indeed, throughout Leviticus, Numbers (in which we have the beginning of vital statistics, with the first accurate census enumeration), and Deuteronomy, excellent regulations are formulated for the prevention of many dietetic, diathetic, zymotic, and enthetic diseases.

As history descends through the intervening centuries, we find here and there, amid the crudities and superstitions of successive generations, gleamings of a sounder sense, seeking for the causes of disease, and relying rather on prevention than on cure. *Ætiology*, which must ever be the very foundation of preventive medicine, has had no more keen and observant student than Hippocrates, whose treatise on "Airs, Waters, and Places" stands to-day in favorable comparison with the most learned lucubrations on the causation of malarial and other endemic disorders published and puffed by our contemporaries. But even he, whose writings constitute the earliest systematic records of medicine, was in all probability largely a collator of the observations made by his predecessors in the *Asclepia*, or "temples of health," which had been accumulated for generations before his time, the temple at Cos having, according to most commentators, been the principal source of his studies. Plato, his contemporary, alludes disparagingly to Herodicus, the tutor of Hippocrates, as having injured his own health and that of many of his patients by his introduction of gymnastics into medical practice, a method which, adopted by the "father of medicine," and fostered by Celsus and his later disciple, Paulus *Ægineta*, is the origin of the very modern panacea of

friction and massage, even almost to its minutest details. Galen, as we all know, wrote voluminously on hygiene; and throughout the teachings of Oribasius, Aëtius, Ægineta, and other authors from the fourth century B. C. to the twelfth century of our era, the means of preserving health occupy a prominent place. Indeed, the "dogmatic" or "rational" school, to which these masters gave birth and maintenance, as opposed to the "empirics" and "methodists," set a seldom-followed example to our medical colleges of to-day in its insistence on the importance of a knowledge of the collateral sciences, and of careful study of ætiology and of the effects of dietetic, meteorological, telluric, and industrial influences, either directly upon health, or indirectly by increasing individual susceptibility to disease.

The crystallization of the doctrines of the Dogmatics was formed in the famous school of Salerno, which bore upon its seal the motto "*Civitas Hippocratica*," and which flourished from the ninth century until as late as 1811. Hence emanated, at the beginning of the twelfth century, the "*Regimen Sanitatis*," whose quaint Latin rhymes were familiar in the mouths of all physicians of the Middle Ages, and, indeed, were household words until comparatively recent times.

It must be admitted that, with few exceptions, these earlier teachings related chiefly to personal hygiene; but, after all, this is the essential basis of the wider sanitary science of modern civilization, which may be concisely defined as applied physiology, and which must found all its operations upon the physiological requirements of individual health. The household is an aggregation of individuals whose conjoined physiological needs are more difficult to satisfy than those of a single person; but what is necessary for all is necessary for each. The municipality is an aggregation of households, demanding still more artificial aid to provide for the conditions of health for each of its many component residents. Hence have arisen the principles and practice of sanitary architecture and sanitary engineering, ranging from the vagaries of the "practical plumber" to the science-guided triumphs of skill exemplified in numerous public edifices and sewage-disposal systems which,

in the present controversial frame of the architectural and engineering mind, it would be invidious to particularize.

But it is evident that these health-preserving arts are ancillary to physiological and pathological knowledge. Neither the architect nor the engineer can solve all the factors of the problems presented, however expert in their respective vocations. The sanitarian must be primarily an accomplished physician, versed in the nature and causes of disease, and cognizant of the physical and chemical laws which regulate the normal functions of the human organism. He must, however, superadd to his medical lore some theoretical, if not practical, knowledge of architecture and engineering. He need not necessarily be able to build a city or to construct a system of sewers; but he should know how such things ought to be done, and how to discover defects therein, and to suggest remedies which the technical skill of his colleagues can carry into effect. Disregard of the essentially medical character of the foundation on which all sanitary studies must be based has led, on the one hand, to an almost ludicrous doctrinarianism, or, on the other hand, to an even more mischievous depreciation of the most obvious hygienic precautions. An architect with a keen eye for the beauty of "sky lines," but with sublime ignorance of the oxygen-requirements of the respiratory organs or the loss of diffusion of gases, will evolve from his inner consciousness a plan of ventilation resting on the somewhat violent assumption that carbon dioxide, being heavier than atmospheric air, ought to flow out through a hole in the floor; the specific gravity and pathogenic properties of volatilized organic products of respiration and perspiration being undreamed of in his philosophy. A self-constituted "sanitary engineer" will expatiate upon the imminent peril of the "sewer gas" arising from six inches of waste-pipe under a trapped basin, or dilate on the danger of retaining in a sleeping-room for a few hours the water in which one's hands have been washed. An excellent analytical chemist, without medical experience, dealing with products rather than with processes, may undertake to measure pathology by so many milligrammes to the litre, and declare water potable

by arbitrary standards of nitrates, albuminoid ammonia, or oxygen absorbed, according to his admiration for Frankland, Wanklyn, or Tidy, though a dozen sewers may empty into it under his very nose; while, *per contra*, the enthusiastic bacteriomania would condemn the purest spring unless it were surrounded with the strictest antiseptic precautions to prevent a single stray germ of *bacillus subtilis* or *bacterium termo* lighting in it from the circumambient air. Amid such conflicting tides of sciolism, meeting from opposite points of the compass and forming a turbulent maelstrom at their place of encounter, it taxes the coolest judgment of the sanitarian to steer a middle course—"Incidit in Scyllam qui vult vitare Charybdim"—and it is little wonder that the average layman, even of the more intelligent class, either obstinately resents all efforts to deter him from slow suicide, or lends a superstitious ear to the miracle-mongering of the "Faith-curists" and an ignorant voice to the crazed fanaticism of the "anti-vaccinationists" and "anti-vivisectionists."

To guide the bark of Preventive Medicine "*in medio tutissimus*," it is manifest that we must first dispel the mists of ignorance—not merely of the dense ignorance of utter illiteracy, but of that "little learning" which "is a dangerous thing" because of its one-sided superficiality. We have to deal, not only with the uninformation or misinformation of the lower classes, but with that of legislators, of governmental departments, and of the medical profession; and, if I have made clear my fundamental proposition that all the superstructures of public sanitation must be built upon the laws of personal hygiene, it follows, as the day the night, that the needed enlightenment must originate in our own guild. The physician is brought into advisory relations with every class of the community; upon the soundness of his views depends to a great extent the popular sentiment in all matters relating to the "*salus populi*"; as is the seed sown by our medical schools, so will be the harvest of public health.

How have these schools fulfilled their mission in this respect? I grant willingly and admiringly that many of them afford com-

plete facilities for learning—if the pupil have the ambition and the capacity to learn; that their faculties comprise teachers as deservedly eminent in their several specialties as can be found the wide world over; but, in the downward competition forced upon them by legislative laxity, all the higher range of professional education beyond the merest rudiments is optional with the student, and matriculants are admitted with less preliminary training than would be required of a retail grocer's clerk. In England, where—and indeed with some justice—it is declared that the minimum standard of medical education is not yet high enough, the regulations of the General Medical Council require a preliminary examination in English grammar and composition; mathematics, including the elements of algebra and geometry; elementary mechanics of solids and fluids; and one, at least, of several optional subjects, embracing botany, zöology, and elementary chemistry. In our own country, the Johns Hopkins University has established a still higher curriculum preliminary to the study of medicine, demanding from its matriculants a sound general academic preparation, and leading them through the paths of physics, chemistry, and biology, by which alone the inner temple of physiology can be reached.

I shall not insult the intelligence of an audience such as I now address—among which are many leaders of professional opinion, and teachers whose names are identified with medical progress—by arguing the necessity of a scientific preparation for medical education. This Association has for its very reason of being the resolve to guard the dignity of our profession against the incursions of charlatanism or dishonest pretense, and I am sure that we all alike deplore any untoward circumstances which may even temporarily lower the standard under which we rally. But all the more does it behoove us to watch for any relaxation of discipline in our own ranks, and to see to it that our own forces are better drilled than those of the “adjectived” sects which we repel. Let us, then, like prudent defenders of a fortress, look if there be any breaches in our walls pregnable by our assailants. In pursuance of the duty assigned to me, I shall for the present confine my round of inspection to the

somewhat vulnerable bastion which I have lately been endeavoring to hold under rather unfavorable conditions as regards garison and commissariat.

There are potentially thirteen hundred local boards of health in this State, nearly all of which are now more or less actively operative; and, as I suppose most of my hearers know, it has been decided that the health officers of all these boards (since the Public Health Act declares that they must be "competent" physicians) come under the Civil Service rules, and are subject, at the least, to non-competitive examination. The questions for this purpose—in view of the lack of hygienic tuition in our colleges—have been confined to the rudiments of a health officer's daily duties, avoiding scientific technicalities, and calling for no more special knowledge than a second-course medical student with an ordinary common-school education ought to possess. But the answers to them—of which many have been referred to me—constitute an arraignment of our educational corporations indefensible, except upon the dubious plea of an "alibi." Of course, there are many honorable exceptions; even in distant rustic regions are to be found men of scholarly attainments and ripe judgment, and I may truly say that several of the best informed health officers in the State are in rural townships, the names and locations of which are unfamiliar outside of the Post Office Department. But these are in spite of, not because of, the requirements of our medical schools. I have seen an excellent examination paper, showing thoughtfulness and sound information, and couched in terse and grammatical language, by a candidate whose medical diploma was granted by a homœopathic college; on the other hand, I have read with dismay that a graduate of a reputable "regular" medical school would deem it advisable to disinfect the intestinal discharges "from Typhoid and Tyfus feavers by properly having all excreta burried at once by using plenty of lime"; and the same gentleman, to distinguish epidemic from endemic disorders, remarks simply that "Epidemic Diseas has a tendency to Spred lik the Small Pox in Montral at the present time." In this connection it may be observed that not more than about ten per cent of our gradu-

ates, as represented in the noble army of applicants for the position of health officer, have any definite views concerning the incubation-period of variola, or the remotest conception of the normal course of the vaccine vesicle, which several of them define as the "kind pox." To a question touching the minimum space to be allotted to each person in a sleeping apartment, the answers received have ranged from ten cubic feet—the content of a good-sized coffin—to ten thousand cubic feet, which would permit three inmates for a rather large three-story city house. To a somewhat similar interrogatory concerning the number of pupils who should be admitted to a school-room containing eight thousand cubic feet, the replies vary from fifteen to ninety-five, and in only three of the papers that I have seen is any reference made to the provisions for ventilation as modifying the conditions of the problem. As regards the average daily consumption of water per capita to be considered in relation to public water-supply for a city or village, one gentleman fixes it at half a gallon, and from this minimum many estimates unreasonably vary up to more than a hundred gallons. Among the endemic maladies attributable to a high level of the ground-water, a moderate number of nominees have thought of mentioning malarial fevers, and two or three have known enough of Bowditch's and Buchanan's researches to allude to the association of pulmonary consumption with soil-saturation; but most of them have incongruously grouped under this head the contagious zymoses, such as small-pox, scarlatina, etc. I could continue the list of lamentable deficiencies almost *ad infinitum*; but let it suffice to say that, even among those whose clinical experience in the treatment of disease has doubtless rendered them trustworthy practitioners, the majority betray a very limited acquaintance with the laws of health, while far too many manifest an entire dissent from the ordinarily accepted rules of orthography and syntax, and an ignorance of elementary arithmetic, as exemplified in the answers to a few simple questions about the calculation of death-rates, which would cast discredit on the lowest form in a primary school. And be it not supposed that these monumental exhibitions of incapacity emanate altogether

from "irregular" schools of homœopathy or "eclectic," or from such erratic concerns as those conducted by the convict Buchanan, in Philadelphia, or the detonating Boanerges who, failing to override the Regents of the University by means of a special charter from the Legislature, has allied himself with the great philozooist in a crusade against the prevention of small-pox. We can not lay this flattering unction to our souls; we can not even ascribe the admitted shortcomings to the ill-equipped and scantily supported colleges which, perhaps, a few of us may be inclined to stigmatize as "provincial." If comparisons were not odious, and if my lips were not sealed officially, I could demonstrate that, in the matter of preliminary and professional qualifications, our largest American colleges—even our illustrious metropolitan schools—show no better average than some of the more modest institutions which, with less emolument, honestly endeavor to do the best with the very raw material presented to them. How far this dead level of infra-mediocrity may be concerned in the "new-code" or "no-code" movement to break down all barriers I have no present desire to discuss. But, as the late Mr. Tweed sententiously remarked, "What are you going to do about it?" Shall we passively wait until the public loses its asinine patience and stamps its clumsy hoof upon our arcana, or have we a right to demand that entrance to the most learned of professions shall only be accorded to those who are fitted to acquire its mysteries? Already the air is filled with mutterings of a "State examination" in medicine—a method wholly impracticable under our political system. Will our schools await this annihilating indignity, or will they prove—as they can—that a scientific medical education renders sectarianism in practice impossible; that the art of medicine means the clinical application of numerous collateral branches of knowledge, and that the physician who is worthy of his title must scorn to prefix any qualifying adjective thereto?

As my theme is limited to public medicine, let us for a few moments consider the requirements of this department of our profession. I have already rehearsed the moderate desiderata for matriculation in professional studies in England; but I have

not yet added that in the ordinary medical course—which there occupies at least four years—hygiene, by the recommendations of the General Medical Council, bears an essential part. In addition to this, most of the licensing corporations grant, on special examination, a special diploma or certificate in Sanitary Science, or, if medical jurisprudence be included, in “State Medicine.” The subjects embraced in such examinations are, in general terms: Elementary Physics, as regards the application of hydraulics, hydrostatics, and pneumatics to water supply, drainage, sewerage, and ventilation; Chemistry, as applied to at least qualitative analyses of air, water, and food, and the ability to interpret correctly the quantitative analyses of chemical specialists; Microscopy in its relation to food, air, and water; Elementary Geology in connection with drainage and water supply; Meteorology in its sanitary bearings; the causation, propagation, and control of epidemic, endemic, epizootic, and communicable diseases; a rudimentary knowledge of sanitary laws and of the computation of vital statistics; practical sanitation in relation to hereditary, developmental, domiciliary, industrial, dietetic, and other etiological factors; in brief, the very alphabet of the art of preserving health. The schedule, at first sight, and on this side of the Atlantic, may seem formidable; but I confidently ask this audience if there be many items in it which the educated physician ought not to know for the benefit of his private patients?

In legislation we have—aside from the scant admixture of educated statesmen—two classes of obstructives: the wholly ignorant demagogues who neither know nor care for aught beyond the petty machinery of partisan politics, and those who have sipped just enough at the Pierian spring to regard “*omne ignotum pro mirifico*” and to imagine that analytical investigation can determine quantitatively all the heterogeneous ingredients of an unknown compound, or that every smatterer in science is competent to lay down dogmatic generalizations. We, who are cognizant of the insufficiency of positive scientific evidence concerning the dietetic or medicinal value of alcohol, must be amused by an enactment decreeing that the pedagogues of

our public schools shall teach physiology with especial reference to the effects of spirituous beverages; but we must admit that the plan was prompted by a praiseworthy though ill-informed motive to suppress the evil of intemperance. We have seen a well-meant anti-oleo-margarine act passed, in ignorance of the fact that four fifths of the population of the world use "other oleaginous substitutes for butter," and that, from a sanitary point of view, the rancid, over-salted, and water-soaked products of some of the bucolic dairy farmers whom the law was designed to protect are quite as objectionable as the trade-frauds which it was intended to prohibit.

One of last winter's contributions to sanitary legislation—based upon the postulate that the health of the people is materially dependent on hops—directs that a chemical analysis shall be made of samples of beer from every brewery in the State, to the end of determining if there be anything not "normal" therein; in blissful unconsciousness that there can be any difficulty in ascertaining whether a given percentage of alcohol was derived from the saccharization of the starch of barley, rice, or other grain, or from an admixture of glucose as such; or that the age of the beer and the condition of the initial "mash" have more to do with the wholesomeness than the employment of Indian corn or the addition of a few grains of quassia. Our Salernian mentors established a more practical criterion in their couplet:

*"Non sit acetosa cerevisia, sed bene clara,
De validis cocta granis, satis ac veterata."*

Our statute books contain many similar instances of well-meant enactments which fail to fulfill their purpose, through lack of accurate information on the part of their originators, and disinclination to seek competent advice. In fact, there seems to be in the mind of the "practical man"—particularly if he have the additional qualification of being "self made"—an inherent and insuperable animosity to what he calls scientific "theorizing," and an undying determination to extend his autogenetic sway over "*omnibus rebus et quibusdam aliis*," quite

unprejudiced by any previous knowledge of the principles which he undertakes to put in practice.

It is ignorance of this sort which has placed public positions, demanding special professional acquirements, on a par with purely political offices as regards brief tenure and rotation. No "Civil Service Reform" can assure the safety of the community in such respects which does not involve the well-advised selection of the fittest and his retention "*quamdiu se bene gesserit*." Preventive medicine is a career of progressive research, not a temporary by-play to be assumed by the first comer at a day's notice and abandoned after a few months of tentative apprenticeship. A public benefactor like John Simon could never be developed under a system of successive appointments for terms of two or three years. Here, from the most important sanitary post in the world—that of the Health Officer of the Port of New York, whose transitory term is only casually prolonged by some political difficulty in confirming his successor—down to the rural health officers who, with miserably insufficient remuneration, may be changed each year, we are periodically casting away the fruits of practical experience and the opportunities of advancing our knowledge, and beginning again *de novo*. Our public health act in this State provides a theoretically perfect machinery through the local boards of health, with the State board as an advisory and controlling center; but its beneficent operation is retarded by the lack of stability and the continual necessity of indoctrinating new incumbents in unaccustomed duties.

The urgent question always asked by the many-headed public, whose elective voice governs all corporate expenditures, is, "Does it pay?" and this question, as regards sanitary improvements, may be unhesitatingly answered in the affirmative, with full assurance that no other form of investment will yield as rich a return. Scores of recorded examples, where a reduction of from twenty to thirty per cent in the mortality has been effected by such improvements, justify the opinion of most statisticians that the average death-rate might be easily diminished to or below 15 per 1,000. Our returns are still too far from

complete to warrant a positive statement of our mortality, but the ratio in this State is probably rather over than under 20 per 1,000, and with an estimated population of 5,500,000, such a diminution—taking the lowest pecuniary estimate of the value of life—would save to the community \$27,500,000 per annum. From the stand-point of our actual returns of preventible deaths, I have elsewhere shown¹ that with a minimum calculation of the proportion of illness to fatal cases, and a liberal allowance for the mortality at non-productive ages, the prevention of but a moiety of this disease and death would pay six per cent on an investment of nearly \$170,000,000. Professor de Chaumont, in a recent address before the Sanitary Congress at Leicester, stated, as the result of the admirable hygienic management in the British army, that “thirty years ago the soldiers at home died at the rate of 18 per 1,000, whereas now the rate is only 6.28”; and even among the general population, in countries where sanitary measures have been fostered, nearly seven years have been added to the average duration of life.

Surely, such results as these are worth paying for, especially when their cost, at the highest, is but an infinitesimal fraction of their profit. But, to attain even greater results, we must ourselves bear in mind, and impress upon the public, that we have yet much to learn which can only be learned through the abstract scientific investigation which our “practical” politicians are wont to decry as superfluous extravagance. To preserve health we must by patient and laborious research discover more than we yet know of the causes of disease. Even in the apparently most demonstrable advance of micro-pathology, we are still uncertain how the “pathogenic” microphytes perform their mischievous mission; whether by some intrinsic property of their own, or by inducing, through their reaction on their environment, a “*tertium quid*”—a chemical product allied to the “ptomaines”; and we are, consequently, far from a satisfactory

¹ “Introduction to Fifth Annual Report of the State Board of Health of New York,” pp. 8, 9. The figures there given are based on the returns for only nine months; the present computation is extended to cover an entire year.

agreement touching preventive methods against the infections which they represent.

But to attempt to point out the as yet only partially cultivated regions of sanitary science would much transcend my time and your patience. The hour for luncheon is drawing near and reminds me of another Salernian apophthegm—

“Inanis venter non audit verba libenter ;”

so that I shall not weary you longer. I am conscious that my most finished effort in so wide a field would need your indulgence ; but I feel that particular apology is due for this hurried paper, written at chance moments, amid the constant pressure of official duties.

TUBERCULAR CONSUMPTION.—IS IT EVER INHERITED?

By HENRY D. DIDAMA, M. D., of Onondaga County, N. Y.

Read November 17, 1885.

It will be assumed in this paper that tubercular consumption is infectious, and that for its causation the bacillus tuberculosis is a *sine quâ non*. Inoculations with inanimate matter never infect. The counterfeit tubercles produced by inhalations of powdered glass, or cheese, or dried mucus, are as sterile as a mule. Experimentation and discussion are of the greatest importance. But investigation should not be forever circular. To the devotees of science, as to the children of Israel of old, the injunction is: Go forward!

IS THE BACILLUS TUBERCULOSIS TRANSMITTED TO THE OVUM AT CONCEPTION, OR TO THE FÆTUS DURING GESTATION?—Cohnheim¹ in 1881 made this assertion: "That tuberculosis is hereditary is too well known to require to be more than stated." The virus "can be transmitted in the semen and in the ovum."

Klein, in a letter to the writer a month ago, says: "I think the assumption that the specific disease tuberculosis is transmitted through ovum or semen to the child is probably correct. If tuberculosis is a specific disease, caused by a specific organism and by nothing else—and that this is so there can, I think, be little reasonable doubt—then it follows that being a *tissue disease*, and not merely a disease of the blood, it is probably transmissible by semen or ovum. Is not syphilis a good example?"

Neisser,² of Breslau, admits the "theoretical *possibility* that

¹ Ziemssen's "Supplement," p. 345.

² Ziemssen's "Hand-Book of Skin Diseases," p. 278.

the bacilli migrate from the maternal into the foetal organism, or that a direct bacterial infection of the ovule or the semen occurs, in analogy with syphilis, relapsing fever, and the silk-worm disease." But he holds that, "in the great majority of cases, the infection is extra-uterine, and occurs after birth."

Ernst Ziegler, Professor of Pathology at Tübingen, in his "Pathological Anatomy," published this year, declares that "if the ovum be impregnated at a time when the generative organs are affected with a tubercular disease, or when the tubercle bacilli are distributed through the body in the secretions and the blood, it is *possible* that the bacilli may be transmitted to the foetus. It is furthermore *possible* that the foetus *in utero* may become infected from its tubercular mother. But no positive evidence in either of these two matters is at hand."

Admitting the possibility of this infection, still, if the ovum were actually inoculated by bacilli derived from the mother, or by those contained in infectious spermatozoa, or if, at a later period, contamination should take place through placental circulation, evidence should be furnished by abundant tubercles in the pre-natal and in the new-born offspring. For, as W. Watson Cheyne stated not very long ago: "It is hardly likely that the bacillus would remain quiescent during the nine months of foetal life, or during the years which often elapse before the development of what is supposed to be inherited tuberculosis."

HAS THE CLAIM THAT TUBERCULOSIS IS ANTENATAL BEEN ESTABLISHED?—Chaussier,¹ in 1812, claimed to have found tubercles in a foetus which died at birth. Husson reports that he found tubercles in the liver of a child eight days old, and in the lungs of a foetus still-born at the seventh month. Billiard met with evident tuberculous granulations in three of a great many infants examined. These observations were made seventy years ago, when histology was immature and unsatisfactory. Velpeau and Breschet never observed them in all their researches. Guizot looked for them in four hundred new-born children, but did not find a single example.

E. Wagner,² in 1876, asserted that tubercles had not then

¹ "Cyclopædia of Pract. Med.," p. 525.

² "General Pathology," p. 451.

with certainty been observed in the foetus; and that in tuberculosis, produced in animals by inoculation, tubercles had not been observed in the embryos or the newly born.

Epstein,¹ in 1879, stated that congenital tuberculosis is extremely rare, to say the least, and that for absolute development of it we must look for the subsequent introduction of the specific material.

Fränkel² declares that tuberculosis has been found once only at birth, and then by Virchow, who informed him personally of the case. Virchow has never himself published this observation. Ziegler affirms that "neither in a child at full term nor in a prematurely delivered human embryo has the presence of tubercles containing bacilli been positively established." One of the latest eminent authorities is Birch Hirschfeld,³ who, in the great work now running through the press, makes this important statement: "In contradistinction to syphilis, which often proves its hereditary transmissions by anatomical lesions in the foetus or new-born babe, *a well-authenticated case of tuberculosis at birth has never been seen.*" . . .

"From such experiences," he continues, "we must conclude that *the disease itself is not transmitted to the child or foetus*, but that those children have a disposition to the disease."

He further states that in those cases of supposed hereditary tuberculosis there is simply an infection resulting from cohabitation with tuberculous individuals.

In apparent contradiction of these statements are certain facts and deductions furnished by my friend Dr. P. M. Wise, of the Willard Asylum for the Insane. Extracts from his letter, sent to me before I commenced this paper, are subjoined. The facts presented seem to prove that the tuberculous pearl disease of cattle, in which bacilli are found, is transmitted to the offspring, and that, in a large number of cases, tubercles are found in countless numbers before birth, or immediately after birth.

¹ Ziemssen's "Supplement," p. 339.

² Gerhardt, "Handbuch der Kinder," vol. iii, p. 170.

³ "Pathological Anat.," vol. i, p. 175.

WILLARD'S ASYLUM FOR THE INSANE, May 28, 1885.

DEAR DOCTOR DIDAMA : Several years ago we had tuberculous consumption develop in our asylum herd of cattle of milch-cows to an alarming degree. During the winter of 1883-'84 the disease assumed an acute form. Dr. Blaine, an assistant physician of our household, made careful clinical observations, and a pathological study of all cases that died or were killed.

The etiology of a number of cases was traced to a diseased bull ; and, in the case of another bull that has since died from tuberculosis, his *seminal* wanderings can be traced through the country by the tuberculosis he has transmitted to his offspring.

The calves born during the past two years from consumptive cows are, almost without exception, diseased ; many of them have already succumbed. Twenty-nine calves killed under four months of age presented tubercular deposits in some of the viscera. One still-born calf was *saturated* with the tubercular deposit, and one *in utero* was found to have it. One calf, from an unquestionably healthy cow but from a diseased bull, was found, *post-mortem*, to have the characteristic disease. The congenital presence of the disease is proved in our experience over and over again. At the International Veterinary Congress at Brussels, in 1883, Lydton quoted more than a score of veterinary authors in favor of the heredity of tuberculosis. Gøring noticed that in bovine tuberculosis one hundred and twenty-three were infected by the dam and forty-three by the sire.

In answer to an objection that bovine and human tuberculosis are not identical, and hence comparisons are untrustworthy and without value, I desire to state that the presence of the *bacillus tuberculosis* is as essential to the diagnosis of bovine tubercle as it is in human tuberculosis.

Professor James Law, of Cornell University, examined our herd with care, and pronounced the disease tuberculosis. This is the *perl sucht* of the Germans. It invades primarily the lymphatics and serous membranes, and in this respect is distinctively different from the disease in man.

The pathological differences, however, are no wider than in several diseases common to man and animals ; and the presence of the specific organism would mark the two forms of disease as of a uniform nature. Dr. Creighton, at the International Medical Con-

gress, in London, maintained that the bovine tuberculosis, or *perl sucht*, could be communicated to children by the consumption of milk from the diseased cows.

Very sincerely yours,

P. M. WISE.

Cheyne, in his letter before quoted, says: "John¹ gives a case—the only undoubted one recorded—of congenital tuberculosis in a foetal calf of eight months. The cow was killed and found to have extensive tuberculosis of the lungs, but *not* of the placenta or uterus. The foetus had tubercles in lungs and liver containing tubercle bacilli." Ziegler, referring to this case, says that John believes the infection to have been through the placenta. The cases furnished by Dr. Wise are marked additions to the undoubted ones heretofore recorded.

Klein, in his "Micro-Organisms,"² asserts that the bacilli found in the pearl nodules are only about two thirds the size of those found in the tubercles of man. In his letter, already referred to, he states: "I still consider that the bacilli in human and bovine tuberculosis are not identical. Their morphological characters, their distribution, and their action on guinea-pigs and rabbits, prove this."

Cheyne, with nearly all German pathologists, holds a somewhat different opinion. He writes: "I do not agree with Klein that the bacilli in *perl sucht* and human tuberculosis are different. There is no ground whatever for such a view. Morphologically the bacilli are identical; the conditions under which they grow outside the body, and the naked-eye and microscopic appearances of the cultivation are the same; while their effect on animals after inoculation, inhalation, etc., is absolutely identical. Klein thinks that the *perl sucht* organisms differ in size from the others. But, supposing this to be the case—and I am not at all sure that it is so—this is not sufficient to separate them as distinct organisms, when they agree in all the other and more important characteristics. Slight differences in size may depend on the mode of staining, stage of growth of the organism, soil, etc."

¹ "Fortschritte der Med.," No. 7, vol. iii, 1885.

² "Micro-Organisms and Disease," p. 126.

Further investigations seem to be needed to reconcile the views of these eminent observers.

Dr. Creighton, it will be noticed, does not claim that human tuberculosis was ever produced in children by the milk of a diseased cow, but merely that pearl nodules have been; while Virchow makes the important statement that no human being ever got a pearl tumor from eating the flesh of an animal which had that disease.

If the bacilli in the bovine and in the human tuberculosis be not identical, there can be no justifiable inference that seminal transmission takes place in one case because it may take place in the other. But, granting that the bacilli are identical in the two complaints, there is no denial that the bovine disease is unlike the human variety in its location, its development, and its appearance. Why may not this dissimilarity be such that one shall be transmitted through the ovules and the other not? How otherwise account for the frequent existence of tubercles in new-born calves, and their entire absence in new-born babes? That certain diseases are transmitted from parents to unborn offspring may be admitted; syphilis and bovine tuberculosis may be examples; but this does not affect the allegation that human tuberculosis is not so transmitted—an allegation supported by a great multitude of competent observations.

At this point it may be assumed as incalculably more than probable that the specific disease tuberculosis is not inherited by the child.

DOES IT DERIVE A CERTAIN MYSTERIOUS DYSCRASIA OR TENDENCY TO THE DISEASE FROM ITS CONSUMPTIVE PARENTS?—Handed down through many centuries has been the doctrine that a tuberculous diathesis is inherited. Sixty years ago Armstrong¹ asserted that phthisis occurs only in the strumous temperament, and that it remained to be proved whether tubercles are ever found in the lungs without a hereditary predisposition to them.

Sir James Clark,² in 1845, declared that he regarded the

¹ "Fevers, Consumption," etc., p. 85.

² "Cyclop. of Pract. Med.," vol. iv, p. 535.

transmission of the tuberculous constitution from parent to child as one of the best established points in the ætiology of the disease.

Sir Thomas Watson avowed his belief in a hereditary diathesis.

Flint,¹ in 1873, cited, as proof that a tuberculous diathesis is in certain cases congenital and inherited, many instances where, the mother, or both parents, having died of consumption, all the children—five, seven, or even nine, in some families—died of the same disease. He is now a firm believer in the bacillary origin of phthisis, with or without inherited tendency.

Ruehle,² in 1875, claimed that no physician who makes an unbiased examination can reject the concurrent testimony of all times that consumption is hereditary from a constitutional taint whose nature is unknown.

Bristowe,³ in 1876, believed that a hereditary taint is strongly shown; that parents free from tubercle may transmit a latent taint which shall reveal itself as phthisis in the children. But he admits that the tendency to consumption which some children seem to possess may come from parents whose health has been impaired from non-tuberculous diseases.

Roberts, in 1884, declared that there can be no doubt as to the inherited tendency to phthisis, and Loomis traces this tendency definitely to the father in some cases and in others to the mother.

Tendency is a continual inclination. But that a continual inclination to consumption is inherited, any more than is the specific disease, may well be doubted.

Nearly twenty years ago Niemeyer announced that a consumptive parent, or one broken down by age, disease, debauchery, or vices, transmits a feeble vitality, an impaired resisting power.

In the light of recent discoveries we can see that the so-called diathesis or tendency is nothing more than cellular im-

¹ "Practice Med.," p. 295.

² Ziemssen's "Cyclop.," vol. v, p. 482.

³ "Practice of Med."

puissance inherited from parents broken down with any disease, or acquired from bad air, poor food, insufficient sunlight, unhealthy occupations, or other debilitating influences. The feeble and fragile cells furnish the bacilli a suitable soil for development and offer an impotent resistance.

Forty years ago Walshe carefully analyzed and recorded the family history of one hundred and two phthisical patients admitted into the Brompton Hospital for Consumption. Twenty-six per cent only of these had a tuberculous parent. Considering the prevalence of consumption, it is safe to assert that twenty-six per cent of all patients in hospitals—those afflicted with typhoid fever, kidney disease, and liver complaint—have a consumptive parentage. Does this prove that a tendency to these diseases was inherited from the tuberculous ancestors? Seventy-four per cent of the consumptive patients did not have tuberculous ancestors. Will it be pretended that these *non-tuberculous* parents transmitted a taint which they did not possess? A *latent* taint is a pitiful assumption.

It is well-known that the greatest care is taken by life-insurance companies to reject not only those applicants who have suspicious pulmonary symptoms, but those also who are connected by ties of consanguinity with consumptives. And what is the outcome of all this care?

Dr. Shepherd, of the Connecticut Mutual, informs me that, of their first 5,000 deaths, nearly 20 per cent were from tubercular disease; while of the next 5,000—partly owing to the selection of medical examiners competent to detect incipient disease—about 16 per cent died from that cause.

Dr. Lambert, of the Equitable, writes that, of their first 3,000 deaths, 21 per cent were from tubercular disease. Their later experience has been more favorable. While the doctor thinks, in common with most medical officers of insurance companies, that there is a family tendency, he states as his impression that "men who are poorly nourished, men whose weight is not in proportion to their height, do die of consumption much more rapidly than those who have a better nourishment, irre-

spective of the fact of consumption appearing as a factor in their family history."

Meech, of Chicago, quoted by Bell in his recent work on climatology, gives reports from twenty-seven insurance companies. Of 37,000 deaths, 20 per cent were from consumption.

These statistics and those from the Brompton Hospital confirm daily observation that a large majority of consumptive cases come from parents who are not phthisical, and who, consequently, could not transmit a dyscrasia, diathesis, tendency or disposition.

A mysterious tendency, which is always fruitless without bacilli, is unnecessary to account for any of the facts of phthisis, and there is no good reason for believing that it exists.

But if a weak constitution only, and not a specific predisposition, be transmitted, why do the children of tuberculous parents have consumption more uniformly than the children of the old man, the drunkard, or the syphilitic?

The answer is obvious. The former are more exposed to the bacillie infection. They live in an atmosphere contaminated with tuberculous poison. Bacilli are everywhere present in cities and crowded apartments; but they are specially abundant in the dwellings of the consumptive. The weakly babe, sleeping in the arms of its diseased mother, breathing her infecting breath, nursing impoverished if not poisonous milk from her unhealthy breasts; why should it not catch the phthisis sooner than its feeble neighbor, who inherits just the same good-for-nothing constitution, but has no special and constant exposure to infection? And, if it escapes in babyhood, why should it not yield to the assaults of the multitudinous bacilli in after years?

Epstein states that the children of tuberculous parentage do well when given to healthy nurses and kept away from tuberculous people; and that, if death then takes place, tubercles are never found at the autopsy. On the other hand, children suckled by tuberculous mothers become tuberculous soon after the development of the pulmonary affection in the mother.

In the remarkable cases recorded by Flint, where both parents and nine children died of consumption, the inference which he to-day must draw is, not that the disease was inherited, but that it was caught. The inherited weak cells were powerless against such an army of bacillic invaders.

THE ÆTIOLOGICAL CONCLUSIONS OF THIS PAPER ARE:

1. Tuberculous phthisis is not inherited.
2. Neither is a special *tendency* to the disease transmitted. In *fragilitas ossium*, the great brittleness of the bones is not spoken of as a *tendency* to fracture; liability is the better expression. An inherited tendency to catch smallpox would be a double absurdity.

3. Many conditions—as poor and insufficient food, damp and impure air, stinted sunlight, low altitudes, certain occupations—favor the taking and development of the disease.

4. Two conditions are almost indispensable: *abundance* of bacilli, and an inviting asylum for them, furnished by an inherited or acquired cellular vincibility.

These conditions predominate in the abodes of consumptives.

THE THERAPEUTIC SUGGESTIONS ARE:

1. The new-born babe of a tuberculous mother should be committed at once to the tender mercies of a healthy wet-nurse, who should occupy well-aired and sunshiny rooms, at a distance from the apartments of every one having a chronic pulmonary affection.

While this isolation from unhealthy surroundings affords no infallible protection against subsequent contamination—since the feeble constitution may still remain—it gives time to fortify the health and so lessen, if not eradicate, the liability to infection.

2. If a syphilitic taint in either parent be known or suspected, prolonged specific treatment of the infant should be instituted; not alone to remove the existing inherited disease, but to strengthen against tuberculosis, which is liable and likely to be superadded. Continued efforts to overcome inherited or acquired weakness may prevent bacillary infection or hinder its development.

DISCUSSION.

DR. T. F. ROCHESTER, of Erie County.—I am very glad to have heard Dr. Didama's paper, and yet I must say that I am not convinced. A great many facts incline me to the belief that pulmonary tuberculosis is inherited in certain instances. Let me state a case. I made a post-mortem examination upon a child three weeks old, born of a tuberculous father but healthy mother. I have the lungs in my possession; one is filled with tubercles and the other has a vomica. The father died of phthisis before the child was born, the mother is living to-day. To me this appears to be an indisputable instance of inheritance. I can cite another example of a child also born after the father's death, but nursed by its mother, a vigorous woman of to-day. The child, who died at the end of eighteen months of Pott's disease of the spine, had tubercular phthisis almost from its very birth. It went on coughing and expectorating with all the signs, but I regret that I could not fortify my diagnosis by an autopsy, which was refused. In Buffalo, to-day, we have a gentleman and wife, both over eighty, who have lost by pulmonary tuberculosis all of their children, seven in number, when they were at about eighteen years of age. We say that here must have been a bad cross. I think it will strike all gentlemen present that we constantly meet with a great many persons without any hereditary tendency, and yet who have the disease. This is especially true of the Irish, who furnish a very remarkable number of cases.

I certainly can not say that tuberculosis is never inherited. I believe it is, and that quite often. Still I am ready to admit that perhaps the majority of cases show that phthisis is not inherited. Where it is developed, it may be that it is communicated by the bacillus; still I am informed, as for example in fibroid phthisis, no bacillus has been demonstrated, and yet it, with some other forms of the disease, goes on just as fatally. Now, why should I not find it very hard to believe that in these two children just instanced the disease was not transmitted hereditarily?

DR. DIDAMA.—I understand, of course, that these claims of Dr. Rochester's are occasionally to be met with in this combat of opinion. I have tried to anticipate such objections by a reference

to the thousands and thousands of instances where evidences have been unsuccessfully looked for by such men as Virchow and others. It is a little surprising that the doctor found two instances here, in a child three weeks old and a child three months.

DR. ROCHESTER.—The second child was eighteen months old.

DR. DIDAMA.—That we will have to leave out, then. There is abundance of time for a child eighteen months old to catch the disease.

DR. ROCHESTER.—The mother did not have it.

DR. DIDAMA.—The father was consumptive. He died before the child was born. Now, a consumptive father does transmit a very feeble constitution. If the father had been, as I saw a case only two weeks ago, an old man, broken down and a hard drinker, with paralysis, he quite likely would have transmitted a certain weakness of constitution. All children are exposed more or less, under depressing and contagious surroundings. Why, then, in a house where the father died of the disease, should it be strange that the child should develop the same? In some cases it develops very early. The doctor does not claim that he ever found or ever examined a case of tuberculosis at birth—I mean crucially examined—and yet how numerous have been the cases where the proper evidences have been looked for but never found. In these cases the doctor has not even examined them microscopically. Syphilitic diseases certainly, at times, simulate very closely tuberculosis. Virchow says that there was not one among thousands of cases examined where tubercles had been found at birth. It does not amount quite to a probability that tuberculosis, as a specific disease, is inherited. Most of the writers merely claim a tendency, and this can come from anybody. Paralytics, drunkards, and many others transmit it. The wonder to me is that more of them do not take it, in two weeks time, even.

DR. ROCHESTER.—I desire to emphasize the fact that, in the lungs of one of the children, only three weeks old, one lung was full of tubercle and the other had a cavity. Therefore I ought to require a great deal more evidence than my friend has presented to believe that tuberculosis is untransmissible by heredity. I much prefer not to differ with Dr. Didama on any subject, and yet, at the same time, I must confess that I do not quite see the proofs of his position, no, not by any manner of means, why many

more children of tuberculous parents should not inherit the disease. Why should it be less true of this than of many other kindred maladies? I do admit that I often see a great many who have no pulmonary tendency whatever where the disease is developed and where the parents are healthy. I do not wish to sacrifice a reputation for candor in the heat of any debate.

DR. FRENCH, of Montgomery County.—As I understand Dr. Rochester, he has the lungs of the first child, which died three weeks of age. It would be an easy matter to subject the lungs to an examination, and that would settle the question.

DR. ROCHESTER.—I should be very glad to have them examined.

DR. DIDAMA.—If this case be true, this might have been one of those cases which are regarded as possible, although never seen, where the father, having tuberculous disease of the testes, might have transmitted the disease in some other form.

DR. C. G. POMEROY, of Wayne County.—At a very early date I formed the opinion, from the observation of cases, without any scientific knowledge on the subject, that, to use a common term, consumption was catching; and whenever I spoke of it at medical meetings my friends would scout the idea. I do not know of, anywhere, any medical gentlemen that held the opinion that consumption was catching—that it was contagious. I take it that we are yet very much in the dark in regard to the true nature of the disease. I have had quite an opportunity, for a country practitioner, to see this complaint, and I am yet coming in contact with a great many cases, since my duties compel me to run over a pretty extended territory. The Irish population have been mentioned as being particularly amenable to its ravages. Twenty years ago they scarcely seemed to have it at all in my section, while it developed almost exclusively among the Americans. Now the rule is reversed, the Irish being eminently the sufferers. I can not help but think, notwithstanding the theory formerly advanced, that all diseases were produced by fungi (now followed by the theory of the bacilli), that there must really be an hereditary transmission of the disease. I can not give the Association any well defined cases—only my observation.

DR. DARWIN COLVIN, of Wayne County.—Let me ask of Dr. Didama one question, not by way of challenge, but for informa-

tion. In my earlier practice, I distinctly remember of having seen two old Quakers, man and wife, who reared fourteen children. They died, as we term it, from old age ; there was no lung complication whatever in either, they never had anything approaching thereto. Thirteen of those children died from what we term phthisis. One is now living, about seventy-five years old, who, to my positive knowledge, has coughed very much for the last thirty years. I only want to know why those thirteen children died from confirmed consumption? Some of them, indeed, had hæmorrhages.

DR. DIDAMA.—It shows that they did not inherit it from their parents, because they did not have it. How they got it without their parents I do not know. I do not know why they should have weak constitutions. If it counts anything, it counts to show that persons are a great deal more likely to have consumption where the parents are not consumptive, as shown by statistics of some hospitals and all insurance reports, than when they are.

DR. ———, of ——— County.—I had one post-mortem in a child about three months of age, in which all the internal organs were studded with miliary tubercles, not inherited, I suppose. The question of bovine tuberculosis and human tuberculosis seems to be entirely different. Now, I remember of a friend, who lived in the South. He said that, prior to the war, it was rare for the negroes to have consumption. Since the war, now that they have poor care and poor feeding, it is a great scourge, and carries them off by the thousand. How can we explain that? Not because it is hereditary, but because of the weakened constitutions, which give them a tendency to take on this disease, which I hold, to a certain extent, is certainly contagious. I saw a post-mortem where fibroid phthisis had existed a number of years, and tuberculosis had been grafted on to it recently. If a patient or child dies of consumption, it is not necessary that it should be tubercular consumption.

PSOITIS AND PERIPSOITIS.—THEIR PATHOLOGY AND DIFFERENTIAL DIAGNOSIS.

By SIMEON TUCKER CLARKE, M. D., of Niagara County.

Read November 17, 1885.

PSOAS and lumbar abscesses, resulting from death of some portion of the vertebral column or of the ossa innominata, have received a large measure of attention, but psoitis *per se* very little. Brainsly B. Cooper, surgeon in chief to Guy's Hospital, as far back as 1850, said: "Psoas and lumbar abscesses are the most difficult to treat; this difficulty arising from the constitutional causes which produce them, and from the insidious manner in which they develop. Having discovered the presence of a psoas abscess, it is still a subject of great importance to ascertain whether the bony parts are diseased; and I know of no certain means of acquiring this knowledge but by the analysis of the pus, to detect the presence or absence of phosphate of lime.

"A difficulty arises, however, in the application of this test, since it is necessary that the abscess should be opened to obtain the pus, and I can not call to my recollection a single instance of recovery, after a psoas abscess had been opened, when the spine was the seat of the disease."

It appears from this language that this surgeon distinguished between a distinctive inflammation of the psoas muscle and psoas abscess only by the fatal termination of the latter, and had no means at hand to differentiate between the two disorders, except by chemical examination of the pus! This remark, I think, will justly apply to all medical writers, both ancient and modern, that is, so far as my own researches have extended.

Along with other publications, I have consulted the issues of the New York State Society (the old organization), from 1807 to date, but have failed to find suggestions. Much to my surprise, too, the "Cyclopædia" of Ziemssen, so prone to prolixity, devotes but three pages to the two affections—psoitis and peripsoitis—for here the author, Senator, of Berlin, only hints at the distinction between this disease and true psoas abscess, and makes no attempt whatever to draw diagnostic lines, or even to distinguish psoitis from typhlitic or perityphlitic abscess.

For the sake of a clearer comprehension of the subject, permit a brief reference to certain anatomical points. The muscles within the abdomen are a single muscle and four pairs. The psoas muscle on either side arises from the body and transverse processes of the twelfth dorsal vertebra, fleshy (mark the word) and not tendinous, and in like fleshy manner from the bodies and transverse processes of the five lumbar vertebræ, making six distinct slips of muscular attachment. At its superior part this muscle is covered by a thin fibrous expansion, which is attached to the points of the transverse processes on the one hand, and to the bodies of the lumbar vertebræ on the other—this constitutes the arcus interior of Heller, and separates the psoas from the diaphragm. On the outer side is another aponeurotic arch—the ligamentum arcuatum—which passes to the inferior margin of the last rib, and includes in its course below the quadratus lumborum. This muscle, with such a spread of origin, makes its insertion by a tendon into the little trochanter of the os femoris, and in a fleshy way into that bone for one inch below.

From this consideration of the anatomy of the parts in detail, it will appear that if any of the primitive bundles are enough wounded to invite the effusion of serum or blood beneath the sarcolemma, inflammation will almost surely follow; for a change in these fluids is likely to occur, and it is not therefore essential that the sarcolemma itself be wounded. Again, if positive rupture of the perimysium internum, or if destruction of nerve filaments occur, the balance in favor of life in the parts is lost at some trivial point, and the retrogressive metamorphosis

of tissue at once begins. The purulent or semi-purulent fluid, running in shut-up sacs from the six points of origin to the one point of insertion, must eventually involve the whole psoas muscle, even to complete destruction. But happy the patient should the work of ruin stop even here, for no part of the body can be said to be safe from complications which may arise from the presence of so dangerous a septic element.

Having said this much, my hearers may be prepared for the statement which is to follow, to wit, that primary suppurative inflammation of the psoas muscle is always the result of violent and tortuous exertion—the straining in parturition, wrestling, slipping on ice, tripping up on roller-skates, direct blows near the margin of the abdomen when the recipient is standing, throwing heavy weights upward, gymnastic exercises in general, or any attempt to avert a fall, may be given as examples of causation.

The first symptom that should arrest attention is a sharp lancinating pain at the time of accident, which, in the male, usually follows the line of the spermatic cord, or darts from the back to the root of the penis; in the female, the pain seems to terminate in the mons veneris, or the labium major of the affected side. This pain, if only transient in character, however, may not be always a feature, but if present, with more or less constancy, may be regarded as marking the tearing of connective tissue. The subsequent slow effusion of serum, or pouring out of blood, need not be attended with much suffering. In the course of from seven to fourteen days, the pain on movement of the corresponding thigh, which assumes a peculiar position, easy to recognize, becomes quite a prominent symptom. The patient, on striving to remove all pressure from the psoas (contraction being as painful as extension), finds sitting preferable to the recumbent posture; but when obliged to lie, he flexes the thigh at the hip-joint, and rotates the limb outward. These are practical points worthy of note. He can still walk, but bends his body forward, and, as he advances the thigh, twists the pelvis and lower part of the spinal column, or even lifts forward the parts in question with the hands. The muscles soon become rigid, owing to the con-

trolling power of the will, and reflex symptoms appear, due to the irritation of the sensory nerve ends, or direct irritation may also play the same part with the motor fibers. Now let me make another point. In proportion to the volume of effusion, the lancinating pain again becomes prominent in the same locality, and spreads itself over the whole territory to which the nerves perforating the psoas are distributed. The hip now seems swollen and the foot bloated. The suffering from lesions of the external cutaneous nerve often becomes intense, rendering the outer surface of the thigh and even the gluteal region abnormally sensitive. At this juncture, if the abdomen, from the umbilicus to the crest of the ilium, and from the pubes to Poupert's ligament, be carefully examined, an easily recognized mass of thickened tissue, with a peculiar doughy feel, will map out the limit and progress of the disease. An accurate diagnosis at this stage, as a guide both to therapy and prognosis, now becomes indispensable. To make my meaning clearer, if there be no history of sudden accident, no torsion of the lower portion of the trunk, and no pain referable to the back, you have most likely to deal with a true scrofulous psoas abscess. This will be more particularly the case if there be present a favoring diathesis, and a slowly increasing tumefaction, with indications of fluctuation. Here no haste is desirable in the development or in the evacuation of the pus. Should you, however, have a round, circumscribed tumor, hard to the feel, and situated in the right iliac fossa, along with constipation, alternating with serous or mucous diarrhœa, constant vomiting, with a tendency to become stercoraceous, and if to all these there also be added a pain having as its seat the region of the cæcum, a non-impairment of the movements of the right leg, the same being neither everted nor flexed, your diagnosis of typhlitis or typhlitic abscess may be regarded as reasonably established.

In the further elucidation of my views, permit me to submit the following :

CASE I.—I was called in consultation, August 1, 1882, by Dr. C. H. Garlock, of Middleport, N. Y., to see Mrs. K., aged forty-three, married, but without children. She had been under Dr.

G.'s care for one month, and was the subject of the following history :

She had received a blow on the abdomen, which at the instant caused great pain, and which pain, according to her belief, had been much aggravated by the points of her corset-springs. Just a month previous to the date of my first visit she began to complain of severe pain in the suprapubic region, just about two inches from the median line. Dr. G. there found a hard cake, about the size and shape of a goose-egg, movable and not tender, and which seemed to be the starting-point of her difficulty. A thorough vaginal exploration gave only negative results. Upon my advent, the tumor, which had much increased in size, was still movable, and of a stone-like hardness. The patient, approaching the menopause, was suffering from menorrhagia every second month. Finding no connection between the morbid growth and the uterus, the os being in a healthy condition, and the passage of the sound being unattended with pain or hemorrhage, both my colleague and myself were at first disposed to think that a fibroid tumor was attached to the uterus by a rather long pedicle, or that we had to deal with a case of ovarian cystomata. After the lapse of a week we again saw the patient in consultation, and the swelling of the foot, along with the disposition to evert the limb, to which was superadded the persistent pain in the tumor, led us to suspect a suppurative inflammation of the psoas. On the 10th of September, during my temporary absence from town, Dr. G. again sent for me ; but the mass, then softening, was hurried on to the suppurative process by poultices, and was finally, September 15th, removed by aspiration, the yield being fifteen ounces of laudable pus. Ten days later I again saw Mrs. K., and found that the sac had refilled, and that there were present the usual indicators of retained pus, such as rigors, sleep-sweats, high temperature, and diminished appetite. A free incision evacuated this time about ten ounces of pus. The drainage-tube, which had been advised, proved so great a source of inconvenience that Dr. G., forced to surrender to his patient, removed it on the third day. I have only to add that, until the abscess was cured, recourse was had to thirty-one aspirations, which aggregated a total of four hundred and fifty ounces of well-conditioned pus. This pus did not contain a trace of phosphate of lime, and was never of the sanious variety.

CASE II.—W. S., aged twenty years, of rather slender physique, and tainted with scrofula on the maternal side, felt a sharp pain in his side after falling from a mowing machine in the harvest of 1882, and the next day was unable to sit upright. The same season he began roller-skating, and had the usual number of falls. The last evening spent by him at the rink was the night before the following Christmas, when it was his misfortune to have for his companion a clumsy lady, heavier than himself. At every slip the lady would throw her entire weight upon her escort, in such a manner as to oblige him to constantly brace his left limb and hold the trunk in a twisted position. The next morning he complained of pain in the left hip, extending to the knee, and it was noticed that he limped slightly. Nothing daunted, however, during the holidays of the season he attended a party, two and one half miles from the city, but was unable to dance, and on his arrival at home remarked that if the rough road had been a half mile longer he should have fainted, so painful had his whole hip and limb become. The next day he took to his bed and sent for his family physician, Dr. Wm. B. Gould, of Lockport, to whom I am indebted for many valuable notes of the case. For my present purpose I shall only make a brief reference to the salient points.

Dr. Gould found his patient with a tense, rapidly bounding pulse, the hip swollen, and the entire left limb very painful, the temperature 105° , the tongue furred, and bowels confined. The urine, frequently voided only in small quantity, was highly colored and of a strong acid reaction. A brisk purgation with the sal Rochelle, and the exhibition of potass. nit. (grs. xv), in large draughts of thin gruel, every four hours, rewarded us with merely negative results, so far as the reduction of the swelling and pain and the material increase in the volume of urine were concerned. About the third day a copious perspiration of acid odor, and increased swelling of the foot, with decided redness at the ankle-joint, naturally caused the suspicion of acute rheumatism, and the substitution of salicylic acid for the nitrate of potash followed. Hypodermic doses of morphia were next in order, and matters went on in this way until, during the course of the third week, the pain in the left testicle became so marked that it led to a careful exploration of the suprapubic region, when the baggy mass of indurated tissue was for the first time detected. Dr. Foot, now added

to our consultation, verified our revised diagnosis of psoitis, pronouncing it of an active and distinctive type. In continuing the history, I have to add that eight weeks from the appearance of the difficulty the patient was seized with a colliquative diarrhœa, which had its effect upon the tumefaction of the region affected, causing it in a measure to disappear. Unfortunately, no one who could identify the presence of pus, saw these dejecta; and therefore, apparent amelioration of the symptoms was our only basis for an opinion. The difficulties of diagnosis may be appreciated when I direct your attention to the fact that there was no rupture of the abscess into any portion of the alimentary canal. In a few days the suprapubic region was again full, tense, hot and tender; the implicated limb distended almost to bursting, by reason of obstructed circulation and interference with the nervous trunks. Two weeks after, or ten days after the first commencement of treatment, Dr. Gould, in presence of Dr. Foot and myself, made an explorative puncture above Poupart's ligament. Then there escaped, with a whistling sound, fetid gases, which escape continued fully five minutes before any fluid appeared. The presence of pus being now demonstrated, a free incision was made and the abscess freely emptied. This discharge, more or less sanious and depraved, continued for almost six weeks, until death closed the scene.

The post-mortem examination, the second day after death, revealed a rectangular pus-cavity where the psoas and quadratus muscles should have been, and it was also found that the points of fleshy origin of the psoas muscle marked just so many points of erosion of the lumbar vertebræ. The destructive process had robbed the bones at these points of periosteum, and even the bodies of the vertebræ in question furnished unquestioned evidence that the cancellated structure of the bone had already become softened. That the spinal column was not the primary seat of the disease, but that it was a true case of traumatic psoitis, was accordingly amply proved.

CASE III.—I was called, May 29, 1884, to see J. S., a strong, healthy farmer, about forty years of age, who represented himself as having a general febrile condition, with decidedly intermittent symptoms. After having prescribed for him, he was left, at his own suggestion, subject to further summons. For this reason I did not afterward see him until June 10, when, at the office con-

sultation, he stated that he had been doing Grand Jury duty every day during the preceding week. He had then, added to his former trouble, a pain in his left hip and thigh, and had, besides, an occasional sharp pain in the lower portion of the abdomen. With the recent case of W. S. in mind, and the further observation of the patient's peculiar tottering hesitation on attempting to walk, and also the marked eversion of the entire limb, which he slid along before him, instead of lifting it, I had a clew to follow. This, my opinion, or rather suspicion, he ridiculed, and preferred his own diagnosis of rheumatism, with which he claimed to be only too familiar. My next interview, June 19, was at his house, at which time I recognized an increase of the fever symptoms, the temperature being 103° , pulse 100, and respiration about 25. Among the subjective symptoms chiefly prominent, I found a persistent pain in the left thigh, aggravated by lying. Already, too, an appreciable emaciation was observable, and his face wore an anxious, despondent look, and, as somewhat bearing upon his case, it may not be out of place to add that he had become exceedingly emotional, not to say hysterical. Being now in quite a different mood than when seen on previous occasions, he gave me the following history: Immediately before first seen by me, he had petulantly caught up a bag of grain, and, with a twisting fling, succeeded in landing it at the top of his wagon-load. This is usually the work of two men. He said that the moment the bag left his hands he felt a sharp pain low down in the abdomen, intense enough to extort a cry; but, despite this, his mettle being up, he still continued the tax upon his strength. From that time onward he had never been the same. A careful examination of the psoas region disclosed a thickened mass of indurated tissue, which at once determined me to favor the formation of pus as speedily as possible. Flaxseed-meal cataplasms, changed every two hours by day and every four hours by night, as large and as hot as bearable, well answered my purpose. The extreme pain yielded to menthol—one drachm to the ounce of alcohol—applied under the poultices. This agent acted so well, in fact, that no morphia, nor any other preparation of opium, was required. Fifteen grains of cinchonidia daily for ten days, and three-drachm doses of iodide of potassium, given in thin gruel daily for eight days, comprised the rest of the treatment. I detected, June 30,

slight fluctuation near the center of the irregular quadrangle which marked the outline of the abscess, and at the same time I learned that a sharp pain under the umbilicus had prevented sleep, and that there were abortive attempts at urination, which exceedingly distressed him. During my journey back to my office, whither I had gone for a catheter, I had been forstalled by nature, for the patient had voided a small quantity of urine along with a quart of creamy pus. The abscess had, in fact, opened into the extreme upper part of the bladder. For two weeks the discharge continued; the patient, who was living generously for the most part of the time, occupied an easy chair, and improved somewhat in strength; but I soon found that not much real ground was gained, that the bladder was not up to its full standard of duty, and that another vent for the pus was demanded. While debating over the best plan of procedure, I was gratified to discover, July 15, two pointings—the one an inch above, the other directly below Poupart's ligament. Again availing myself of the judicious aid of Dr. Gould, we agreed to open freely at the most dependent part, which being done, both points disappeared after a copious and forcible jet of pus. A probe easily passed from the opening its entire length into the abdomen. The matter thus evacuated, and that which was discharged for many days, was carefully examined for the presence of urine; for I greatly feared, if pus could flow from the abscess into the bladder, that urine might enter the abdominal sac, but it did not.

In ten days after this pus ceased to flow from the bladder, and the urine became normal, both in quantity and quality, the severe diaphoresis ceased, and the appetite, of course, returned. On the 1st day of September he was hobbling about on crutches, and on the 19th the abscess had closed, and no sequelæ followed. Let me conclude the rehearsal of the case by the statement that recovery was complete, and in every respect satisfactory.

DISCUSSION.

DR. FREDRICK HYDE, of Cortland County.—I am sure that no one of all the Fellows of this Association is more delighted than I with the last paper and the one before it. I am especially pleased with the paper just read. It makes some points which I think may be regarded as established. In the first place, I infer from the history of these cases that they were mainly traumatic, and that the inflammation was situated in the soft tissues primarily. Now, with this origin we have here (and the symptoms have been very plainly described indeed) the conditions which follow the crippling of the very important muscle known as the *psoas magnus*. I need not say this is a deep situation of tissue.

As was said in the paper, there pass long periods in these cases before the diagnosis is settled. We come to our true conception of the difficulty so late that, when there is an opening made by the surgeon or spontaneously, there runs out another kind of material than is described when it is opened earlier. I ask those who claim that it should burst of itself whether or not they ever saw laudable pus? They will admit that they never did. So much for the origin of this disease. Having developed, with the usual attendant emaciation, it at length becomes a masked abscess; then comes the suspicion that this difficulty originated in the vertebral structure. I will not say that this may not sometimes be met with, but accept this qualification in your own minds, that according to my own observation the large majority of these cases termed *psoas* and lumbar abscesses have a beginning in the soft textures. What else is probable? These delicate structures when diseased must, or rather are most likely to, implicate the periosteum of the vertebræ by reason of intimate contact. Now come inflammation and suppuration, and so, eventually, there is an absolute lesion of the large structures of the spinal column. Then, when the patient dies, the difficulty is pronounced to be an original case of caries of the vertebral structure.

Now, here is the lesson of this paper: So soon as these characteristic symptoms appear, and they are very characteristic, what are we to suspect? Let me enumerate these self-same symptoms:

They are an inability to raise the lower limb, there is a drawing up, and, when you ask this patient if he will be good enough to extend that limb, he may make the effort, but he can not do it. He is unable to stretch out this muscle, which takes hold of the trochanter minor. Now, with these symptoms, what should you say? Is this a test of caries? Is this the old-fashioned disease, scrofulous disease beginning in the bone? What do these cases say? Their answer tallies precisely with my own observation. Here were injuries, inflicted primarily upon that muscle, and they started the whole difficulty. How easy this may be when we take into consideration the muscular origin and insertion. We have in the first instance an acute inflammation ordinarily, and that inflammation is followed by the normal product, laudable pus, which is evacuated by the aspirator, and in due time this patient recovers. Now, suppose that the pus remains in its envelopment, for such abscesses have not an early pointing, and the symptomatology is moreover obscure, how long will it be before you can detect fluctuation in the sheath of the muscle? In due time a tumor is discovered in the lumbar region. It is, so to speak, a white swelling. Beneath Poupart's ligament comes a tumor. Again, above Poupart's ligament. Again, lower down in the thigh, and by and by the parts yield and it points. Now, what are the aspects of the case? The patient is drawn up in the way just spoken of, he is losing weight, and that rapidly, and a general change has come over him. The tumor now pointed finally runs out another form of pus. It is characteristic of that form of pus which will be found in caries of the vertebra.

I have only to say further that this subject has not received its meed of attention; there has not been labor enough expended upon it. How many cases, I ask the gentlemen before me, have you not been summoned to see when such patients were far spent, and emaciated with "sleep-sweats"? (I like this last term, it is definite.) This large swelling is in the man's thigh, or by the rectum—sometimes in both places. I have said over and over that a psoas abscess may point almost anywhere.

Another important lesson in treatment has been read to us by the author. Here it is: An acute inflammation. It passed on to suppuration; it is deep in here with a little localized pain only, the objective symptoms of its presence are *nil*, and now have we

forgotten the aspirator? Well, by means of the needle very deeply inserted we make plain a purulent condition, inside, as it may be now, of the sheath of the muscle. Here is a grand discovery. Shall we wait and see this patient emaciate, and say that he really did have disease of the vertebral tissue? But, on the other hand, suppose that the aspirator has not at once fulfilled its mission as a diagnosticator, we should make another trial with it, and yet another. Bear in mind that this pus should be reached early, before it becomes a changed, broken down product of chronic inflammation, fraught with more and more mischief. Early evacuation, you see, is the point. You say that it is an important tissue; all the more necessary that the prophylaxis come before these changes come. You anticipate my rule of practice—to wit, not to wait for bone-complications. We should reach the *origo mali* before it reaches the bone. This, I am happy to say, we can do in a great many cases, which if left until progress has gone on will result in more or less vertebral destruction. But then, again, I am told that this is a chronic abscess, and that the popular method is to leave that undisturbed. I do not believe that doctrine is correct. I believe that it can do much harm. Let us not waste time in argument, but search for the pus; for after it has undergone degeneration it will be absorbed, and increase emaciation only to hasten the patient down to death. For these reasons Dr. Clarke's paper is timely, suggestive, and very important.

DR. JOHN CRONYN, of Erie County.—I would call attention to a matter which the doctor has not mentioned; that is, the method of ascertaining the presence of pus by placing the patient under chloroform, and extending the limb. In this way the psoas is lifted up, and if there be any pus between the abdominal walls and the sheath of the muscles it is very easily determined. I mention this because I have myself satisfactorily demonstrated it. I shall relate the incident: A boy after a fall was taken to the hospital, but was subsequently removed to his home, and came under my observation. I detected the condition of affairs while he was under chloroform, and by the device which I then adopted. I made an opening, when pus flowed from the wound, and the patient soon recovered. It is one of the distinguishing marks between psoitis and typhlitis. Without an anæsthetic you can not straighten the limb without great pain; but put the patient under

chloroform, and then the tumor has a chance of showing itself plainly enough upon the abdomen.

DR. DIDAMA.—May I ask of some of these distinguished surgeons if they ever had any experience in calenderising these abscesses?

DR. CLARK.—I would say that every one of these cases was washed out whenever the aspirator was used.

DR. CRONYN.—I desire to add to my statement that it is scarcely necessary to do anything more than to keep the leg straight after the opening: the opposite walls of the sac will be kept so closely together that adhesion must soon take place.

DR. E. M. MOORE, of Monroe County.—In this transition period of opinion it is a serious question how far tuberculosis is a contingent or factor in these psoas abscesses. It seems to have been somewhat of a conviction for a long time that these chronic abscesses were dependent upon a tuberculous condition. A young man with such an abscess goes on for two or three years, and after death we find tubercle in his lungs. The constant fatality of these cases has brought about this opinion, and yet I can not help believing that the reasoning is *post hoc, ergo propter hoc*, against which, in our profession, we have to guard so carefully.

I have for many years firmly believed that a large number of chronic cases were really cases of psoitis, in the proper sense of the word, that have affected the attachments of the muscle and the periosteum of the bone. What interested me largely in this paper of Dr. Clarke's was the fact that in one of these cases there was a denudation of the bone in a period of a few weeks. We know that the origin of this must have been traumatic. This was incidental to the inflammation, and not to tuberculosis. It is settled in the condition of the acute forms of psoas abscess that denudation of the bone will take place. It has been insisted upon with reference to the chronic forms that, inasmuch as denudation of the bone occurs, and caries results almost invariably, therefore caries was the cause of the whole difficulty. Now, I have been able to trace some cases directly to some traumatic cause which ran into these chronic states. I have been told by teachers of surgery that chronic cases are of one kind and acute cases of another—that the acute cases are to be classified simply as psoitis, while the chronic ones are to come under the head of tuberculosis.

I have yet to learn that where you have an acute inflammation you may not also have a chronic one. Now, when you trace this chronic abscess up to a definite time when an injury was received, and a post-mortem examination reveals some recent tubercle in the lungs, it is a fair inference—the tubercle not having softened—that the tubercle was primary and the more patent lesion secondary. I recollect an instance of a young man who in a scuffle was thrown across a log. He had pain at the time, so severe that it drove him to his bed, which he kept in a kind of way for some time. Then there was a rally, the pain grew less, but did not pass away; gradually he became worse, then better for a while, but finally settled down into a chronic condition, feeling so ill as to be unable to attend to his ordinary duties. At length he spent most of his time in bed, and did not take to his feet at all. Then at last the abscess broke, and I saw him just at the death. The autopsy showed the whole of the pelvis to be filled with pus; and the ilia were denuded—a fact which was certainly not due to the accident. Upon examination of the spine, what did I find? Caries, to be sure, but different from that kind which allows of walking around. The bodies of the vertebræ remained entirely perfect, except a small portion that was lost, along with the intervertebral cartilage. This I accounted for from the fact that he was obliged to keep the recumbent posture. This inflammation, then, in my judgment, had extended to these soft parts first, and the tubercle was only the consequence. Thus, you see, I put myself on record as being perfectly convinced that these tuberculous conditions arise from diseased conditions of the bone.

Now for the question of the bacillus. In the Copenhagen Congress this question came up, and such men as Locke and others took the old ground. But the bacillus can get in in all sorts of ways. It is certainly true that during the time the pus is contained there the declination of life is very slow as compared with what it is after the opening has taken place. If the bacillus must be found there, I insist that the bacillus came in afterward, unless you can show definitely to the contrary. Let me say at this juncture, that I have not seen any statement that the bacillus has ever been drawn out by the aspirator. I had hoped that Dr. Hyde would have cited his numerous cases, because he has had more experience on this subject than any man I have met. I think the chronic

cases can be traced to traumatic causes just as well as the acute cases ; that it is psoriasis always ; that the inflammation is established in the fibrous tissue and then extends to the bone, producing denudation.

DR. HYDE.—I am sure that the Association, crowded as it is with business, is not waiting to hear from me now. I only wish to say that the experience brought out by Dr. Moore is only confirmatory of the fact to which I have so often alluded, that in all these cases we should search for a traumatic cause. Then, if there be one, and the case progresses along to the general deterioration of the vital powers, we have a dyscrasia, marked by pallor, emaciation, and, in a word, by impaired nutrition as a general expression. Why should not this be the rule when not a tissue is receiving its meed ? You say here is a case of tuberculosis of the vertebral tissue. You have given the condition a name, to say the least, but what explanation would you have given had you met your patient earlier, and taken part in arresting this mal-nutrition, and so had left these vital organs to their own integrity ?

SHOCK ; OR, THE EFFECTS OF INJURIES TO THE NERVOUS SYSTEM.¹

By CHARLES W. BROWN, M.D., of Chemung County.

Read November 17, 1885.

WHEN an accident or injury has been received by the living body, it is through the medium of the nervous system that the immediate effects are communicated to produce the condition termed "shock." The first result of an injury is characterized by disturbance of function, owing to the impression which the nervous system has received. When any part has been subjected to any kind of sudden force, it may be rendered torpid without involving the whole constitution. This form of shock is termed partial, in contradistinction to the universal. When the effect on the system is more general, it approaches more nearly the evidences of what the old surgeons used to call "constitutional alarm."

Shocks may be produced by a great variety of causes, some bodily and others of a mental character; and by causes as numerous as the variety of injuries, and the intensity as varied as the temperament of the individuals.

Dr. McClellan has classed them under four heads: 1. Those which act on the body itself; 2. Those which act on the mind; 3. Those which act on both the body and mind in equal or unequal degrees; 4. Cold.

The intimate relations which exist between the two great divisions of the nervous system—the cerebro-spinal and the ganglionic—influence largely the condition of the shock, for impressions made on one are communicated to the other.

¹ The writer, in a general way, acknowledges his indebtedness to Dr. George McClellan's valuable paper on the same subject for many important suggestions.

The symptoms on receipt of a severe injury are usually in proportion to the intensity of the impression which the system has received. On receipt of a severe injury the sufferer becomes pale, cold, faint, and trembling; the pulse is small and fluttering; there is a great mental depression, with imperfect apprehension and incoherency of mind, frequently complicated with vomiting and convulsions. The patient will be rather delirious or comatose, with a cold, clammy sweat, and in extreme cases this condition will resemble protracted syncope, which may in turn be designated overwhelming shock or collapse. A decided fall in temperature may now take place, with a range of as much sometimes as four to six degrees.

There is a variety of shock, of which I have seen a few cases, which has not been described by many writers on this subject. It has been termed "insidious shock," on account of the deceitful character of its symptoms. This is manifest, as when a large amount of tissue is crushed, for example, when the car-wheels have passed lengthwise over one or both limbs, or a great joint has been torn open, the victim meanwhile declaring that he suffers no pain. As his mind is clear and he converses rationally, the case looks altogether too well for one of such magnitude. The pulse and respiration withal continuing nearly normal, one not accustomed to the effects of such severe injuries on the system would be betrayed into giving a favorable prognosis. I have seen cases of severe injury, where the shock was sufficient to produce death in five or six hours, and yet would be met with this same declaration of no pain; there would be singing and jesting to express the happy state of mind, while the only foreboding symptom at all threatening would be a melancholic cast of countenance, and a stare of alarm or suspicion when the bedside was approached. In instances like these I merely allude to the thermometer as a valuable aid in determining the amount of shock.

I readily recall the case of a boy ten years old, whom I saw about a year ago, an hour after a car-wheel had passed over his right ankle. I well remember his pleadings against amputation, and his asseverations that he did not suffer pain of any account.

His face was pale, to be sure, but his pulse regular and normal, counting only 80. The surgeons, won over perhaps by his importunities more than by his deceptive condition, decided to defer interference until the next day ; but the little patient soon sank into a low delirious state, and died the very same evening. Here the shock was extreme, but the system gave out no responsive manifestations of its gravity.

On February 25 I saw a healthy, well-developed colored woman, who a few minutes before, by the passage of the wheels of the engine, tender, and two cars, had both legs crushed to a pulp at the knees. The amount of blood lost was small ; the pulse, though somewhat thread-like, was regular ; the surface of the body was cold, and the temperature under the tongue reached only 94°. The mind seemed clear, and there was some talking with friends about business matters ; but not much complaint of pain, merely that her legs felt numb. Several hymns were correctly sung by her in a loud, clear voice, and there were also expressions that she did not fear death. Stimulants were given by the mouth, and whisky and coffee injected hypodermically ; hot blankets were wrapped around her body, and the thighs were amputated at the lower third during narcosis by ether, as near simultaneously as possible ; but soon after the respirations became irregular, and she died an hour later.

This case is a good illustration of that peculiar ecstatic condition occasionally met with after severe injuries, where in place of the gloom to be rightfully expected there is a state of exhilaration, nay more, of absolute joy. The less severe injuries, on the other hand, show much less disturbance, so far, at least, as they appeal to our senses. The wherefore of the difference is, of necessity, a problem to be solved.

The happy state of mind to which I have already alluded I have often noticed several days after amputation of an arm or leg in a person of previous intemperate habits ; but have been in the habit of accounting for the phenomenon as being a surgical fever, where delirium is not an unusual symptom. But I merely wish to refer to the difference of the conditions without entering into a fuller discussion of the matter.

There are circumstances which greatly modify the degree of

shock; e. g., the locality of the injury, the sex and age of the patient, and the state of the general health at the time of the accident, but more especially, the idiosyncrasy of the individual. It is not only the nervous and irritable that suffer from shock; the fat and corpulent may be affected by it from the slightest causes, and hence such persons seldom make good subjects for successful operations. They bear the loss of blood badly, and are extremely liable to perish from erysipelas and pyæmia in consequence of this lack of nervous force or energy. Thus, there may be some persons, apparently in perfect health, upon whom the slightest operation or injury will produce death. As an illustration of some of the minor excitants to shock, trivial to be sure, I may mention the fainting of some individuals after so simple a procedure as vaccination.

Injuries to the head and spine are the most important, as they necessarily implicate the great nerve centers, upon which depend all the functions that constitute life. The spine, too, being so liberally supplied with nerves which convey impressions immediately to the nervous centers, when it is injured, can not but excite our gravest apprehensions.

When scalds and burns involve a considerable space the shock is necessarily sudden and severe; so too injuries to the thoracic viscera are accompanied by great shock; and yet, those implicating the abdominal organs are still more serious.

There prevails a popular opinion that women do not bear injuries so well as men, but observers competent enough to form correct opinions incline to the belief that the reverse of this is true. This, however, will remain an open question, relating, as it does, more to individuals as such than to sex. Shock in old people, of course, is liable to be more intense and persistent than in middle age, because, in the young, where the vital forces are chiefly occupied by development and growth, the system rallies more rapidly after the first onslaught, severe as it may be. Hence, it has become a settled conviction, even in the minds of the laity, that children usually rally more rapidly than the adult or the aged.

Chronic disease, again, by the depression of the vital forces

and the constant drain upon them, diminishes the violence of the shock, as is shown when a leg is amputated for necrosis, or disease of the joints. Hence, may I not be warranted in saying that the impression upon the system is very much less than where an injury is produced suddenly, the individual being in good health. Any morbid, organic affection, existing at the time of the reception of shock, will very naturally lessen the chances of recovery. Persistent shock ought to make the prognosis very guarded, as its persistence may depend upon some fatal injury yet to be brought more sharply to our attention. Crushing injuries by the railway, or by large projectiles, should excite our anxieties more than those caused by the ordinary road-wagon or by the bullet. Extent and amount of force are consequently important factors in discounting the future.

The necessity of every care in regard to the surroundings of patients suffering from shock are, I think, as a general rule hardly appreciated; as the omission of what might appear a trifling detail may be the cause of a fatal termination of the case. The attendants, to be, if possible, experienced, should use proper judgment; though outside of the hospitals, and far away from large cities, surgeons are obliged to put up with such help as they are able to obtain.

In elucidation of some of my views let me report a case. In August last I amputated an arm, at the upper third, which had been crushed between car-bumpers, the patient being a fleshy, stout appearing man, twenty-three years of age, and of previous intemperate habits. After the operation his condition seemed, in every respect, favorable; pulse good, temperature from normal to $102\frac{1}{2}^{\circ}$, mind clear and hopeful; this, up to the fourth day, when, during my absence, his mother, a feeble old woman seventy-two years of age, was allowed her first interview. She gave vent to her feelings by loud crying and moaning, and told her son that he would certainly die, and then sent for a priest. On my visit, soon after, the patient told me that he "was going to die; and there was no use trying to get well." The change for the worse now became most marked. The pulse

rose, the temperature dropped to 96° , and in less than twelve hours from the time his mother told him he would not get well he died. As all this occurred in so short a time, the cause of death was, beyond a peradventure, due to the mental shock added to that of the injury. I will concede that the shock in the case just recited did seem light for the magnitude of the injury, and might be classed as of the insidious variety. But when the hope of recovery was abandoned there was a sudden overwhelming, even after reaction had apparently been established. As it is evident that reaction, when it occurs, is brought about by the forces of nature acting through their own impulses, the treatment should always be to assist and to counterbalance the contending influences in the system; as nature's stimulus, which we look for to bring about the much desired reaction, may suddenly become the foundation of what is known as "constitutional irritation."

No other class of cases requires more prompt judgment on the part of the nurse, and skill on that of the surgeon, than the management of the various forms of shock. The treatment of shock should be conducted with two objects in view: the first is to promote reaction, and the second, to control, if possible, supervening inflammation; for to prevent it altogether is by no means an easy task.

In the slighter cases, arising from whatever cause, it is the better plan to wait and watch; maintaining, as nearly as possible, mental and bodily rest, and using such means as nature demands in her efforts at repair. It is superfluous for me to say that in the severest forms of shock, where an immediate fatal result is threatening, immediate action coupled with good judgment is above everything else the best test of intelligent treatment. Here delay is eminently dangerous.

Upon physiological grounds an attempt should first be made to restore the temperature of the body, by the application of external heat, as death occurs in many cases from the want of its prompt application. If deglutition is practicable, a hot brandy or whiskey "sling" should be given; coffee is well, or brandy should be injected hypodermatically, and repeated fre-

quently, as it has a powerful influence in reviving the almost suspended action of the heart. Dry heat, applied by means of heated woolen blankets wrapped around the body and limbs, bottles of hot water, or heated irons and bricks placed near the body under the bed clothing, are all valuable aids in the restoration of the suddenly lowered temperature.

DISCUSSION.

DR. E. S. F. ARNOLD, of New York County.—In discussing the question of shock it does not seem to me that the cause of it is laid down with sufficient definiteness; in other words, satisfactorily accounted for in the text-books. Dalton describes “shock” as a general disturbance following severe and sudden surgical injuries, which affects the entire nervous system and destroys or suspends its irritability.

Now, the nervous system, as we know, consists of three great divisions, each, however closely connected with the others, having its separate and peculiar functions. We have firstly the brain, and secondly the spinal marrow with the nerves issuing from them, and thirdly the sympathetic system with its ganglia and plexuses. The two former preside over sensation, consciousness, and motion, which are largely influenced by the will; the latter, we are told, presides over nutrition and secretion, and independent of our will controls with unceasing activity those vital actions of repair and waste going on through the entire body. The other nerves are as dependent upon the filaments of their respective ganglia as the circulation of the blood upon the integrity of the vaso-motor system, a continuation probably of the ganglionic.

Material injurious interference with the brain or spinal marrow will be quickly perceptible in loss of function of the nerves issuing from them, such as impairment of sensation or motion or other disturbance. May we not also reasonably infer that any serious and sudden morbid impression made upon the great sympathetic center will partially arrest those vito-chemical actions necessary to sustain animal heat, and the continual repair of waste going on

over the entire body. The outcome is that general depression of the vital powers which we call "shock," from the lowering of bodily nutrition. Every vital function flags, and as a result we have faintness, collapse, or chills, as the case may be. The other two branches of the nervous system are secondarily affected, as also the circulation with the rest, but the effect upon them is not in due proportion to the greater or less severity of the exciting cause.

A sudden emotion of fear or grief, or even the sight of a drop of blood, may cause fainting with loss of consciousness and volition; yet in very severe surgical injuries, with prolonged general collapse, volition and consciousness may be little impaired. In a case of this kind, where the left foot was torn off, and the lower half of the tibia and fibula completely smashed, requiring amputation below the knee, the left thigh fractured, with compound fracture of tibia and fibula of the right leg, and compound fracture of the great toe, in addition to a scalp wound four inches in length, the little patient, a boy of eleven, whom I saw within twenty minutes after the accident, was perfectly conscious, and said frequently to his distressed mother, "Don't cry. I shall get well. I am not going to die." Again, a person may be attacked suddenly with a violent neuralgic pain, such as earache or toothache, without producing any perceptible shock, or he may be very badly beaten in parts of the body supplied mainly by nerves of sensation or motion without necessarily producing shock, when very much less violence over those organs supplied mainly or wholly by the ganglionic system will cause not only severe, but perhaps fatal shock.

These facts seem to me to indicate that the phenomena of shock are due primarily to a morbid impression on that portion of the nervous system which presides over nutrition, and from a partial arrest of the latter. Granted there be truth in this view, we might expect that, should the impression on the sympathetic system be so severe as totally to arrest its functions, nutrition in every part of the system would suddenly cease, and instant death be the result. Such appears to be the case when a person is struck dead by lightning, or instantaneously deprived of life by a large dose of hydrocyanic acid. True, the effect of the latter is attributed to paralysis of the heart and arrest of the circulation, but in death by sudden cessation of the heart's action from other and morbid causes there

are certain post-mortem phenomena which we do not find in hydrocyanic poisoning.

I was taught that when the action of the heart ceased, and life departed, the tissues manifested a separate vitality, that of one lasting say fifteen minutes, of another twenty, of a third perhaps half an hour or more; and we know that muscular irritability exists for some time after death. We know further that the blood coagulates, and perhaps as a last effort of vitality the body stiffens. Now, in the case of the poisoning, the individual seems instantaneously deprived of every vestige of vitality, the blood does not coagulate, the body does not stiffen, and decomposition at once sets in. May we not, therefore, conclude that the effect upon the heart is only part and parcel of the general condition.

After death in the collapse-stage in cholera—that is, after the action of heart and brain have apparently ceased—I have myself several times observed the body grow warm, and its heat to be long maintained after death in scarlatina. To what else can we attribute this phenomenon than to a lingering vitality in tissues after the death of the individual? The most important vito-chemical processes of nutrition and secretion, fortunately for us, go on without either consciousness or will, and the organs by which they are carried on receive their innervation mainly or wholly from plexuses of the ganglionic system; and when the exciting causes of contagious or infectious diseases enter the system, whether by inspiration or through the medium of the blood, the ganglionic plexuses must be the first to receive the morbid impression. May we not, therefore, reasonably suspect that disturbance of the ganglionic centers thereby occasioned impairs their functions, and so diminishes vital nutrition as to cause thereby those sensations of chills, of lassitude, and of weariness that prevail? Such chills are only a milder degree of the same shock produced by sudden severe surgical injuries. In the subsequent recoil or reaction from shock we have a rallying with diminished force, which goes on with increasing irritability until the powers of life fail, or until the equilibrium is gradually restored and recovery follows.

When an important vital organ is attacked, the portion of the nervous system upon which the first morbid impression is made is the ganglionic, and here we have again the same chills, of more or less severity, according to the importance of the organ at-

tacked. If the approach of disease be slow and gradual there will be less of chills, or they may be absent ; there is little or no shock. Other portions of the nervous system, as I have observed, as in toothache or earache, may be suddenly and violently attacked without producing shock ; even in tetanus and hydrophobia, although the powers of life may be quickly run down by a secondary effect on the organic nervous system, the symptoms differ from those of shock, properly so called.

I believe that all exciting causes of disease from without act directly and primarily on the sympathetic system, and cause chills or not, as they may or may not be sufficiently severe to involve the general function of nutrition. In surgical injuries the amount of shock or collapse will depend on their severity, and on the effect on the sympathetic system. Some, under similar circumstances, will bear much more than others without shock.

It is strange that the sympathetic nervous system should have been so ignored practically in its relations to disease or injury, considering the purely vital nature of its functions, and though we do not hear of the influence of remedies upon it, still I believe that many may and do act upon it in the most direct manner. We know that each of the great nervous centers controls certain actions or functions through the nerves issuing from it, that each is in close connection with the others, and is in turn reacted on by them, but the why and wherefore of their peculiar action belong to those mysteries of life which neither the scalpel of the anatomist nor the microscope of the histologist suffices to determine.

DR. FRANK H. HAMILTON, of New York County.—The term “shock” may be defined in its broadest sense as a general paresis of the nervous system, induced by a sudden but temporary commotion, either mental or physical. In its more limited and strictly surgical sense, it may be defined as a general paresis of the nervous system induced by external violence. I propose only to speak of shock in the sense in which it is employed by surgeons.

Traumatic shock may be caused by any sudden injury or vibration conveyed directly or indirectly to the brain or spinal marrow ; by direct injuries of the abdominal or pelvic viscera, especially of the stomach, liver, intestines, bladder or uterus ; and more especially when these latter are accompanied with contusion, as in the case of gunshot and other similar injuries. It may be occasioned by

injuries of the nerves of the extremities, as in crushing accidents or accidents accompanied with great laceration ; by major amputations ; by prolonged surgical operations of any kind, and in various other ways.

Some writers have recently sought to make of concussion and shock two distinct pathological conditions, each having its own distinctive phenomena and sequences, while, in fact, concussion (which is here a synonym for "commotion") only stands in the relation of a cause to that condition of general paresis, or collapse, which we term "shock."

Precisely how these agents or influences operate in producing shock has been the subject of much speculation, but without having added much, if anything, to our actual knowledge. The symptoms, however, which imply its existence have long been recognized and understood.

In its lesser degree, the person so affected may be only dazed. He may be able to move his limbs and walk about, and to perform many acts ; such, for example, as rendering assistance to others and finding his way home unaided. He may even declare to those about him that he is uninjured ; but he will, in all probability, be unable subsequently to recall the incidents attending or immediately following the accident, or to state how he found his way home, his condition, in short, resembling very much that of a person partially intoxicated.

In the more severe forms of shock, the patient loses temporarily the power of locomotion ; he has a feeling of extreme exhaustion ; he is pale, and covered perhaps with a colliquative sweat ; his urine may pass involuntarily ; he may have nausea, imperfect vision, and imperfect audition ; his heart acts feebly, and his respiration is short or scarcely recognizable. In still graver cases, there is a total abolition of consciousness, of sensation, and of voluntary motion, and death often takes place speedily, preceded in most cases by cardiac embolism. In some cases, however, patients recover from even this extreme condition of collapse.

In either class of cases recovery is liable to be followed by a reaction, indicated by a general nervous or febrile disturbance, or by localized inflammatory actions. The liability to serious reactions is much greater in some persons than in others, and can not

therefore be safely prognosticated, although, as a rule, it would seem to be greatest in persons of nervous temperament.

The reaction sometimes assumes the character of traumatic delirium ; and with others the injury, even when it belongs to the class first described, is after an indefinite period of time followed by chronic cerebral or spinal disturbance, accompanied with slow, but steadily progressive paralysis of various portions of the body.

Since the introduction of railroads, in the opinion of some surgeons, a new form of shock has originated, which they term the "railroad shock," inasmuch as they think they have only met with it after railroad collisions or other railroad accidents. They speak of these cases as characterized by the total absence of symptoms immediately after the receipt of the injury, and as resulting in the development of grave symptoms, such as pain and tenderness along the spine, of paralysis, local anæsthesia or hyperæsthesia, impairment of vision and of memory, etc., these symptoms occurring at remote and indefinite periods after the receipt of the injury, and terminating sometimes in complete paralysis or dementia.

You will have no difficulty, gentlemen, in classifying a certain proportion of these cases with the group first described, in which the symptoms of injury to the central nervous system were at first scarcely cognizable. Such cases were well known and understood long before the introduction of railroads, and are true examples of shock ; but if, since the introduction of railroads, we must admit that a new class of spinal injuries has been discovered—and I am disposed to make this admission—it seems to me probable that in these examples there was primarily *no injury to the spinal marrow at all*, either direct or indirect, and that they were not properly examples of shock. In my opinion, the primary injury was a lesion of the ligaments which support the spinal column ; which ligaments subsequently have taken on an inflammatory action, to be propagated at a later day to the meninges, and perhaps to the spinal marrow itself.

In this way alone can we explain the localized pain and tenderness found to exist, after the lapse of a few days or weeks, at different points along the spinal column ; but in which cases there was at the first no sign of injury, not even a discoloration or abrasion upon the back, at the points where the pain and tenderness subsequently became developed ; while the absence of sensi-

bility in the ligaments, in their normal condition, would sufficiently explain why, having suffered lesion, they gave at first no indications of the injury they had received.

In the case of the railroad accident the occupants of the car are sitting, usually, partially supported by the backs of the seats. In this position, the rapid progress of the car being suddenly arrested, the upper part of the body is sent violently forward, and then again as suddenly arrested, in such a manner that the spinal ligaments suffer a severe strain, or wrench. The motion of the person may be aptly compared to the motion and sudden arrest of the lash in the snapping of a whip. This is the only thing which appears to me peculiar about a railroad accident, and which can be made to explain why there should exist a difference of any kind, and especially of the character heretofore described, between railroad accidents and those caused by any other traumatism.

I have spoken only of the ligaments—both elastic and inelastic—as having suffered a wrench or overstrain in those so-called “railroad” cases in which no immediate or subsequent signs of shock have been presented, but in which, after the lapse of many days or weeks, grave symptoms, such as local and general paralysis, occur, plainly referable to pathological changes in the spinal cord itself. It is not intended to say, however, that the muscles and tendons of the back have not been overstrained, as well as the ligaments; nor would it be unreasonable to suppose that, in a certain proportion of these examples, the spinal meninges, now that the spinal column has in some measure lost the support of the ligaments, have been subjected to a similar injury, and such as may give rise subsequently to meningeal inflammation, and perhaps to an increase of the arachnoid fluid.

The essential point which I desire to emphasize is, that the injury was not primarily, in the class of cases I have indicated, of the nature of shock resulting from a commotion of either the peripheral or central nerves; but that those structures which lie external to the spinal marrow, and contribute more or less to its support and protection, of which the ligaments constitute an important factor, are those which have suffered direct injury, and from which inflammation has subsequently progressed to the spinal marrow itself.

The treatment of shock may be briefly summarized. It is to

bring about reaction by rest, and in some cases by the aid of warm drink and cordials, or by the application of heat externally. Whatever we do we must see that we do not push the reaction too far, bearing in mind that there is generally more danger in this direction than in the opposite.

The treatment of the sequences of shock, such as paralysis, inflammation, etc., can not be properly considered in this place.

DR. JONATHAN S. KNEELAND, of Onondaga County.—I do not propose to discuss the question of shock, but rather to say that it rejoices me to hear so clear, correct and distinct a statement from my old friend Dr. Frank Hamilton, who first taught me anatomy and physiology. The reader of the first paper spoke of a certain exhilaration which follows injury. This phenomenon I have twice experienced in my own person, but I never could explain its nature. For two hours I did not know anything perfectly. I felt something as Tam O'Shanter did. I felt good all through. A blow on the head did it. Thirty years after I fell and struck the other side of my head; for two hours after I fell I was more or less unconscious. Some things I knew well, and other things I did not know anything about, but all the time I was exhilarated.

DR. S. H. FRENCH, of Montgomery County.—One thought in relation to shock has not been brought out; that is, that some persons are vastly more susceptible to it than others. It seems to me that I am one of that unfortunate kind. Extreme pain from a colic, for instance, will produce such a shock that I immediately faint away, and have fallen upon the street from pain several times, and I have learned to guard against it. A pain in any part of the body, more often a pain in my bowels, will first make me feel faint, then my eyesight becomes involved, and as I walk I can hear my feet strike the pavement, still I know enough to lie down, wherever I may happen to be. In some instances, hours will elapse before I can go on again. In answer to inquiries regarding my physical condition I may say that, so far as I know, I am in sound health. Now, no emotion or fright in my case will originate any such train of symptoms, but pain from any cause will. This being the case, I do not know how it differs from shock—in fact, may it not be merely a mild manifestation of that peculiar, somewhat indescribable condition.

DR. FREDRICK HYDE, of Cortland County.—In the first paper

that was read upon the subject under discussion, the author spoke of the temperature as being 96° , and that the patient died. Now, with myself, thermometry in surgery is as important as it is in the general practice of medicine, and when such a temperature was mentioned in connection with the fatal issue, it brought to my mind many examples of severe shock following injuries. Let me picture a typical case. The surgeon, summoned in haste, has presented to his notice a torn-open limb, or some other formidable lesion, and the prognosis is bad. The question is, What shall be done? The fracture can not be dressed. Why, there seems to be no other expedient left but to elevate the depressed bones or to amputate. The patient exclaims that the limb is not worth dressing; that he is in no pain and desires to be undisturbed. Under these circumstances, if that is all about the case, why should not the surgeon go on and make the operation? I wish to repeat, before he makes a decision, that he should take the temperature. Having been driven to the operation by extraneous appeals, and by his own tendency to catch at a straw, he has to lose his patient without much warning.

So far as I have kept a record of cases, with special reference to temperature as settling the advisability of an operation, I have to say that when I have made such an operation when the temperature of the body is 96° , I have lost—*every* case. I hope the experience of the surgeons now present is better than mine. Be that as it may, to me it is important before proceeding to operate that I test the temperature, and if it be subnormal, that is 96° , I refrain from doing anything more than to stop any ordinary hæmorrhage, should any be present. But under those circumstances I would have you note that we do not have much hæmorrhage—there is, in fact, too much shock. Here the circulatory symptoms, which are always important, are invaluable.

I have not said what I might do, the patient being very likely to die under these circumstances. Of course, it is a good rule to resort to diffusible stimulants at once, with the hope of changing the condition, and bringing the system into proper form for an operation. I make one exception: if this low temperature is from loss of blood, my experience is that there is certainly more hope of the stimulants being beneficial.

DR. EDWARD M. MOORE, of Monroe County.—These papers

open out so wide a field that it is difficult to know upon what point to speak. Therefore, perhaps, it is best for me to say little or nothing. However, I desire to throw in my mite in reference to one of the conditions of recovery from shock observed by me in making amputations. It is this, that stimulants, provided the stomach is tolerant, may often be taken in large quantities without perceptible influence upon the circulation, and yet, when ready for your amputation, or what not, feeling that it should not be delayed, you begin with your ether, when the pulse of the patient will come up full and round, even while the knife is passing through the tissues. Now, it seems to me that the explanation of that is in the fact that the ether relieves the pain; it arrests and stops it at once, and thus we have the full benefit of the stimulants given. I have seen this more than once. I think it is a thing to be thought of in connection with these cases of violent injuries which do not react readily under stimulants, even as a means of bringing about reaction.

The question naturally asked is, What is shock? The answer, in the present state of our knowledge, certainly can not be given any more than to the question, What is pain? Both are indefinable. Then what is it physiologically? We get the response, It is a modification of a nerve. Yes, we know that, but how is that nerve modified? We are aware that it is a terrific force exerted upon the nerve system, and that the influence is imparted to the nerve centers, and that it embarrasses their action. What does the interference with a nerve center mean? It means death, inasmuch as the nerve center is intended to control function; hence, death from shock may be only a question of time. We can not explain how a nerve-injury, with an outcome of pain, and that pain transmitted along the line of that nerve to the nerve center, produces death; nor can we penetrate the mystery how when no pain is present the same catastrophe follows. These are the ultimate facts of nature which we can not reach.

I may say with reference to Dr. Hamilton's paper, with which, as a whole, I very cordially agree, and I do not know but that I do so entirely, I still have a doubt whether or not the doctor is entirely justified in asserting that the termination, at the end of months or years, in these cases is the result of a slight shock in the beginning. There is a change that has undoubtedly taken place in the nerve

center which results in death after a while. I know that we have had to struggle with that question in railroad injuries so much that we are familiar with a great many cases, and I can not but believe that here the process is an inflammatory one, begun, perhaps, in the ligamentous apparatus, and, assuming the chronic form, thus destroys function. It is possible I may be wrong, but I have always taken that view of the matter.

Injuries of the extremities, however, necessitating amputation, are of a different kind, and I think we do not observe resulting from these injuries this condition of breaking down. If patients do recover from them, they recover perfectly, and in this respect they differ from the injuries of the spine, and for that reason I inclined to the belief that the injury is of a progressive character.

DR. HYDE.—Allow me to ask one question. You say that the progress of inflammation in certain tissues extends, and that there is a loss of function. I desire to ask how far does it result in any form of lesion that comes in the train of that process? Will it stop as function, or will it progress further than that?

DR. MOORE.—I do not think that you have understood me exactly. In speaking of the loss of function I merely undertook to show that a variety of causes might produce an early suspension of function. I was then alluding to Dr. Hamilton's reference to slight shock, which condition in the course of weeks or months becomes fatal. These are cases which I can not but believe to be due to a progressive inflammation. Its behavior is the same as that of an inflammation anywhere else.

DR. ———, of ——— County.—Permit me to ask a question. My inference from what has been said is that you believe that, when stimulants are administered prior to the administration of ether, the ether quiets pain and permits the operation of the stimulants given before the ether. Have you ever seen ether produce this improved condition after an accident, and during an operation, when stimulants were not administered?

DR. MOORE.—No, I have not, because they have always had stimulants, in some shape or other, before my arrival upon the scene.

DR. ———, of ——— County.—Do you not think that the ether produces this state independently, and not indirectly; that, in fact, the ether operates, and not the other stimulant.

DR. MOORE.—I see your point, but can not answer.

DR. JOHN F. CONWAY, of Kings County.—I have frequently observed the phenomenon noted by Dr. Moore. I have been impressed by the fact, but I always attributed the exaltation of function to the diffusible stimulation of the ether; because, in those cases which I can recall, there was entire freedom from pain. On that account, I attributed the reaction of the patient to the stimulant action of the ether.

DR. W. F. GARDINER, of Kings County.—As house surgeon to Saint Mary's Hospital, in cases of operation, I have often had occasion to remark the improved condition after the administration of the ether. I have but very little doubt that the credit thereof was due to the stimulation of the medicinal agent in question.

DR. ELY VAN DE WARKER, of Onondaga County.—In reference to the question of shock, my experience comes from the peculiar chill that follows a direct impress upon the uterus, as, for instance, in the matter of an intra-uterine injection. A most acute pain is invariably followed by shock, and a shock which, to my mind, is due exclusively to the pain. You have every one of the characteristic phenomena of the shock. Now, the next after that is the chill, which, to my mind, is simply a beginning reaction, and then we encounter the high temperature, which, being an ephemeral fever of short duration, does not need any treatment.

In order to explain the phenomena, I assume that nerve action is due to movement of nervous particles, nervous atoms. We have an arrest of action as the first result of shock. A second effect is chill, and the further swing of the pendulum from that reaction is the fever. I have seen that occur very often in instances of pelvic disturbance, which we are constantly liable to explain by septic poisoning; yet this last can safely be excluded. It satisfies me that shock consists largely of a nervous element, and then, assuming an arrest of nerve movement due to the shock, the reaction follows as a natural consequence.

DR. CHARLES W. BROWN, of Chemung County.—It has occurred to my mind, in regard to the theory of the sudden fall of temperature, that it is due to the arrest of that which produces heat, namely, life; it is a partial arrest of life. The digestion and assimilation, etc., go to produce animal heat. The sudden arrest of this must produce so much depression of the tempera-

ture. I do not at all subscribe to Dr. Van de Warker's theory, that shock is largely due to pain. In railroad cases I do not know of one where severe pain was complained of ; especially where the injury was severe. My observation is that pain does not begin until the reaction is thoroughly established. Where there is no pain, there is no complaint, and usually no dread.

DR. F. H. HAMILTON, of New York County.—I fear that my friend Dr. Moore has misapprehended my meaning. It was only in those cases in which there were no primary evidences of shock did I assume that initiatory inflammation was not in the matter itself, but in the overlying tissues.

REPORT OF A CASE OF INSANITY FOLLOWING GUNSHOT INJURY TO THE HEAD; CERE- BRAL CYST; ASPIRATION; RECOVERY.

By CARLOS F. MACDONALD, M. D., of Cayuga County.

Read November 17, 1885.

HAVING consulted such files of leading journals and standard works on mental and nervous diseases, surgery, etc., as were readily accessible, without finding a case closely resembling the one about to be described, I do not feel wholly unwarranted in claiming your attention to its brief recital. I think you will agree with me that it is unique, on account of its intrinsic interest, and I hope, also, that it will prove a clinical contribution to the study of the localization of brain functions.

Darwin Dingman, convict, aged twenty-seven years, native of New York State, married, a farmer by occupation, and of intemperate habits, was admitted to the State Asylum for Insane Criminals, from the New York State Reformatory, on June 6, 1885, upon the certificate of Dr. H. D. Wey, physician to the Reformatory. The commitment stated that Dingman was convicted, in Delaware County, of assault in the first degree, and sentenced on February 27, 1883, to the State Reformatory for a maximum term of ten years; that on a former occasion he had been confined in jail at Cooperstown for sixty days, on a charge of intoxication; that he was addicted to liquor and tobacco, and probably to self-abuse; that he had been employed in prison as a general laborer and stone-cutter; that his present bodily condition was good; that he had a depression of the external table of the frontal bone, said to have been caused by a pistol ball, three or four years ago; that so far as known he had not been insane before conviction; that at the time of his conviction he was a "crank," of unknown heredity,

but not regarded as insane ; that his habits as to sleep and food were irregular ; that he had been confined in a cell since the present outbreak of violence began, four days previously ; that the form of his insanity was chronic mania, and that the cause was possibly a bullet wound in the frontal region.

Dr. Wey further stated that he based his opinion as to the patient's insanity upon the following grounds : " That on the morning of June 2d he was discovered in an excited state, pulse quickened, skin dry, tongue pasty and covered by a whitish fur ; he refused to answer questions, stared sullenly at those who approached him, and occasionally muttered 'go away and don't tantalize me.' He resisted being examined, and it was necessary to use force to bring him out of his cell and place him where he could be studied. For the last four days he has been under my observation, and during that time he has refused to answer questions or communicate in any way. He has been emotional, and upon being talked to or chided would lose self-control and cry. His manner and actions would indicate he was suffering from a delusion which he has thus far concealed.

"For a number of weeks past his cell-mate has noticed that he has surrounded all his actions with an air of mystery, and that he has been irritable and uncertain in his temper. At work he has been quick to fly into a passion, resenting with sullenness and displeasure any directions given him as how to perform his work. Ever since his admission to the Reformatory, in March, 1883, he has, at intervals of two or three months or longer, been subject to attacks of irritability, which were regarded as outbursts of an ungoverned temper rather than as proceeding from mental disease and organic brain trouble, the result of the former injury to his head, the mark of which is to be found in the frontal region beneath the hair.

"Recalling his action and manner in the past, and connecting them with his present condition, I am inclined to believe there has been mental disturbance, varying at times in intensity, for several weeks past, or even for months."

On admission to the asylum, about 11 A. M., the patient was in a state of violent maniacal excitement, with marked bodily agitation, so much so that it was impossible to satisfactorily make the usual physical examination of the chest-organs. When spoken to

he would not reply, but would shake his head violently, strike the top of his head with his hands, and thrusting his fingers into his hair would frantically pull it as if to relieve himself from the great distress which he evidently suffered. He was immediately sent to the ward, given a warm bath, placed in bed, and kept under special observation for the purpose of determining his exact condition uninfluenced by drugs. At noon he refused food, the sight of it seemed to excite an exacerbation of the violence, as also did any attempt to examine his head. His face presented a livid, dusky hue, and his hands were cold and clammy; pulse, 116 and quite feeble; temperature, 100° ; respiration, 40; pupils dilated, tongue milky in appearance, broad, flabby, and edges indented by teeth. So far as could be determined by careful examination, there was no paralysis, anæsthesia, or disturbance of the special senses.

An examination of the head revealed a nearly circular depression of the skull, about half an inch in diameter and about a fourth of an inch deep at the center, and corresponding to which, in the scalp, was the point of crossing of a crucial scar. The skull lesion was located, as nearly as could be determined by external measurement, over the right first frontal gyrus, at a point corresponding to the junction of its anterior and middle third, being about one inch and three eighths from the margin of the hairy scalp, and about three eighths of an inch to the right of the median line. The least pressure upon the point of depression seemed to produce intense pain, and would throw him into violent bodily agitation. During the afternoon he remained substantially in the same condition as above described; at 6 P. M. he again refused solid food, but took, voluntarily, a pint of egg-nog, containing mag. sulph. one half ounce, and potass. bromid. grains 40. He continued restless and sleepless throughout the night, drinking water with avidity several times; also had one movement of the bowels, and passed a moderate quantity of urine, which had a specific gravity of 1035, but contained neither casts, albumen, nor sugar. On the following morning he seemed worse, shaking his head and striking it violently with his hands, or upon the floor; and wildly clutching his hair with his fingers; requiring the constant presence of an attendant to prevent him from inflicting self-injury. About 7 A. M. he drank a cup of coffee and some water, but refused to eat or speak, and frequently smacked his lips and moaned. His pupils

were dilated and his eyeballs presented a staring appearance. Pulse, 104; temperature, $99\frac{1}{2}^{\circ}$; respiration, 40. At 11 A.M. he was given, subcutaneously, 12 minims of Magendie's solution of morphia, which partly calmed him for about one hour, when his symptoms returned with increased violence.

From the nature of the symptoms, and in the then absence of information as to the removal of the bullet, I was of the opinion that the seat of the mischief was in the immediate region of the skull lesion, and that the trephine would probably reveal the existence of either the bullet itself, a spicula of bone, or an abscess, or possibly the latter in association with either of the two former. This opinion was concurred in by Dr. William S. Cheesman, of Auburn, who was present by invitation, and my assistant, Dr. Thomas L. Wells, all agreeing not only as to the propriety of the operation, but that such a procedure was demanded, in accordance with the sound surgical doctrine laid down in the following language by a recent writer on injuries to the head:¹ "The later forms of compression of the brain by lymph and pus are peculiarly grave, and, unless remediable by the surgeon giving them free vent—and too often then—they sooner or later destroy the patient." Accordingly, it was decided to make an exploratory operation, by cutting down upon and laying bare the skull at the point of depression, to ascertain its condition and, if necessary, trephine it.

At 3 P. M., the patient having been etherized (Dr. Wells operator), the skull was exposed by a crucial incision through the scalp at the point indicated; on dissecting back the flaps, which were firmly bound down to the bone by cicatricial tissue, it was found that the opening in the skull was not closed by bony union, but was completely bridged across by dense fibrous tissue. Finding the skull thus pervious, it was thought best, before using the trephine, to explore the region beneath the dura mater by means of a hypodermatic syringe, which should serve the double purpose of a probe and aspirator, after the manner proposed by Drs. Fenger and Lee,² "as a means of ascertaining the seat of abscess through the trephine opening."

¹ Charles B. Nancrede, M. D., "Injuries of the Head," Ashhurst's "Encyclopædia of Surgery," vol. v, p. 66.

² "Abscess Cavities in the Brain," "American Journal of Medical Sciences," for July, 1884.

The needle of the syringe was inserted in three different directions, care being taken to avoid any lateral movement of the instrument, each time to the depth of about one inch, with entirely negative result ; on the fourth insertion, however, the direction of the needle being downward, forward, and outward, the syringe was instantly filled with a clear, limpid fluid. This was repeated several times, until nearly two drachms of transparent serum had been removed, and no more could be obtained. A microscopic examination of the serum, made while the patient was still under ether, showed nothing but a few fresh blood-corpuscles, which were regarded as extraneous and, consequently, of no significance.

Desiring to limit the gravity of the operation to the minimum, it was now deemed advisable not to expose the brain by trephining, but to let the patient emerge from the effect of the anæsthetic, and to note whether or not the tapping had afforded him any relief. The wound was accordingly closed by horse-hair sutures, and dressed antiseptically. As soon as the effect of the ether had passed off, the patient began to converse, and, to our surprise and gratification, in a perfectly rational manner. He said that he felt well, and expressed great gratitude at finding himself free from the pain in his head, which he said he had suffered almost constantly for upward of two years. On being offered a dose of whisky, which he recognized by the odor, he said he would rather not take it unless it was deemed absolutely necessary, as whisky had been the cause of all his trouble.

At 6 P. M., less than three hours after the operation, he gave a lucid and detailed history of the circumstances attending his injury and subsequent condition, the essential points of which are as follow : Says that he has always been healthy, and that there is no insanity in his family ; that on January 26, 1883, after having drunk to excess, he quarreled with his wife and attempted to shoot her, failing in which, he, with suicidal intent, shot himself in the head, inflicting the injury above described, the weapon being a small pistol, the caliber of which he did not know. The shot rendered him unconscious for a time, the duration of which he was unable to state. On regaining his senses he found himself in the county jail, to which he probably had been committed to await the result of his injury. He learned at the jail that Dr. George F. Entler, of Oneonta, had attended him at the time

of the injury, but failed to learn whether the bullet had been removed.¹

Dingman was subsequently indicted for assault in the first degree, tried, convicted, and sentenced to the State Reformatory, as has been mentioned. He says that he was comparatively free from head symptoms during the first six months of his stay at the Reformatory.² Then he began to suffer from frequently recurring frontal headache, the pain being at times almost unbearable. He also became very irritable and emotional, slept badly, and experienced much difficulty in pursuing his studies, the least mental effort seeming to greatly aggravate his head symptoms.

He went on in this way until about June 1, 1885, at which time he was assisting in laying tile at the Reformatory, which is the last thing he remembers prior to finding himself in the asylum after the operation.

As soon as the patient had fully recovered from the effects of the ether, he was given some milk-punch, and at 9 P. M. received thirty grains of chloral, which caused him to sleep well during the remainder of the night.

June 8th.—Is quite rational, says he feels well with the excep-

¹ At the time of the operation the writer did not know whether the bullet or any portion of the skull had been removed. Dr. Entler since then, under date of July 14th, wrote to me as follows: "Darwin Dingman received an injury—he will give you the date—by a pistol-shot fired by himself. The ball entered the soft parts near the anterior border of the first convolution—right side. Being unable to find the ball by the aid of a probe, I thrust a grooved director under the skin as far as it would go, and cut to the point of the instrument—about an inch. Here—at the point at which you found the cyst—the ball was found between the two bony tables of the skull. After cutting away a small portion of the bone, the ball was with difficulty removed. By the aid of a probe I was able to explore the hole thus left, but I did not find any fracture of the inner table or 'marked depression'; the same day he was removed to Delhi, the county seat, and I did not see him after. The case is certainly a singular one, and I would be glad to hear more of it. The ball I am unable to find, although I had the same for a long time in my office. I shall send it to you should I ever find it.

² The following copy, kindly furnished me by Dr. Wey, of an entry made in the Reformatory biographical register on March 11, 1883, five days after Dingman's admission to that institution, would seem to throw some doubt upon the accuracy of this statement: "D. Dingman, when coming through the hall to-day, was flourishing and gesticulating with his hands in a very excited manner. Being locked up in his room, he walked up and down, repeatedly saying, 'Yes, I killed her, G—d d—n her; I intended to kill her.'"

tion of a slight pain in the head. Took, with apparent relish, his breakfast, consisting of toast, eggs, milk, and coffee. Morning pulse, 84; temperature, $99\frac{1}{2}^{\circ}$; respiration, 28; slept more or less during the night. In the evening complained of slight pain in the frontal region, and asked to have the bandage loosened a little, which was done. Pulse, 90; temperature, 99° ; respiration, 26.

June 9th.—Slept well last night. Awoke refreshed and entirely free from pain. Pulse, 92; temperature, $99\frac{1}{2}^{\circ}$; respiration, 32; slightly delirious in the evening; complains of a tingling sensation in the frontal region; pupils moderately dilated; evening pulse, 88; temperature, 99° ; respiration, 40. Was given twenty grains of chloral hydrate at 10 p. m., after which he fell asleep.

June 10th.—Rested well during the night, and awoke refreshed, cheerful, and quite free from pain. Pulse, 84; temperature, $98\frac{3}{4}^{\circ}$; respiration, 26; evening pulse, 80; temperature, $99\frac{1}{2}^{\circ}$; respiration, 28; gratefully refers to freedom from pain. Was again given twenty grains of chloral, which produced sleep.

June 11th.—Passed a good night, says he feels well, and is free from pain. Pulse, temperature, and respiration normal.

June 13th.—Continues the same. The dressings were removed to-day, also the sutures; the scalp wound has healed by primary union; patient eats and sleeps well; says he "never felt better in his life."

June 26th.—Since last record the patient has been up and about the ward daily, and is doing well in every way.

July 7th.—Continues well. Was to-day detailed as table waiter at his own request.

September 29th.—Patient is now in robust health, having increased forty-five pounds in weight since his admission to the asylum. With the exception of a mild evanescent delirium on the evening of June 9th, he has been continuously free from mental disturbance since the operation was done. He was to-day transferred to the Reformatory as recovered.

November 9th.—A letter received from Dr. Wey, under date of November 8th, contains the following: "I saw Dingman this morning, and examined him carefully. He is now in as good health as at the time of his return. He tells me he has no more headache, eats and sleeps well, and feels in every way better than he has in three years. I have had him excused from all school-work,

and trust that, by thus relieving the pressure upon him, he may make such a record as will gain him a speedy release."

The points to which I would call particular attention in the report of this case are the following:

1. A lesion located anteriorly to that portion of the first frontal gyrus included in the center marked 12 by Ferrier, and which is now regarded as the anterior boundary of the motor area, giving rise to psychic derangement, unaccompanied by motor or sensory disturbance, furnishes affirmative evidence, both positive and negative, of the correctness of the view held by a majority of modern neuro-physiologists, namely, that the motor and sensory areas of the cerebral cortex are not located in that portion of the brain lying anterior to the coronal suture, and aptly designated by Ferrier "the præfrontal lobes, or antero-frontal region."¹

2. That when not in a state of inflammation, the brain-substance may be punctured with a fine, clean needle, with comparative immunity from danger or disturbance of function.

3. The certainty that recovery in Dingman's case was directly due to the operation.

4. Cases of insanity dependent upon injury to the head, and accompanied, as they usually are, by mental irritability and explosions of temper, are, as a rule, so seldom benefited by drugs or the so-called moral treatment, that they have come to be regarded as incurable from the beginning. In fact, I believe it is the custom of most writers upon insanity to speak unfavorably regarding the prognosis in these cases. That the prognosis is bad in a considerable proportion of cases of traumatic insanity must, I think, be conceded; but it is equally true that a certain limited number may be cured, or at least greatly improved, by timely surgical interference. Obviously, the cases which are most likely to be benefited by operative procedure are those of which the one just reported is a type, that is, cases with depression of the skull, in which the location of the brain lesion can be determined with a reasonable degree of

¹ "The Localization of Cerebral Disease." Ferrier, Fig. 27, p. 59.

accuracy, the site of the lesion being such as to render the use of the trephine anatomically admissible.

By reason of the numerous and valuable contributions which have recently been made to our knowledge of neuro-physiology and the localization of cerebral disease, the practice of trephining for the relief of epilepsy resulting from injury to the head has been revived, and may now be said to have become quite fashionable, if one may judge from the frequency of cases reported in the journals of the day. Such being the case, it would seem to be not unreasonable to maintain that the arguments advanced in favor of the operation for epilepsy would apply with even greater force to cases of lunacy depending upon similar causes.

As long ago as 1848, Dr. C. Lockhart Robertson, then physician to the Military Asylum at Yarmouth, England, ably advocated trephining for the relief of insanity with depression of the skull, the result of injury to the head. He reports a case of ten years' standing which was cured by the operation.¹ He also, in the same article, cites two other cases as having been permanently cured in this way.

Dr. G. Mackenzie Bacon, Superintendent of the Cambridge Asylum, England, has recently reported a case of complete recovery following trephining of the skull in the case of a lunatic, nineteen months after the receipt of a blow upon the head.²

These successful cases, together with that of my own, are suggestive, not only to those who are especially engaged in treating the insane, but to the general practitioner as well, into whose hands insane patients usually come in the early and most important stage of their malady, and upon whose judgment and advice, as the family physician, the friends of patients are wont to rely.

5. That simple cysts in the brain substance are exceedingly rare.

Ross, in his valuable work on "Diseases of the Nervous

¹ "On the Application of the Trephine to the Treatment of Insanity, the result of Injury to the Head." Winslow's "Psychol. Journal," January, 1848.

² "Journal of Mental Science," January, 1881.

System," page 557, says: "Cystic growths in the brain are not as common as was formerly supposed." Bastian, in speaking of the morbid anatomy of adventitious products in the brain, affirms that "it seems extremely doubtful whether simple serous cysts are ever met with in the substance of the unaltered brain tissue"; and again, "It is true that larger cysts are not unfrequently met with in the brain, but these, when not due to one of the two forms of cystic entozoa, to be hereafter described, should rather be termed pseudo-cysts, since they are not primary formations, but have resulted from the modification of pre-existing pathological states."¹

Dr. E. C. Seguin reported to the American Neurological Association, in 1885, a case in which at the autopsy there had been found a cyst of the superior portion of the vermis, extending into the right cerebellar lobe.

In the "Transactions of the Clinical Society of London," vol. vi, Dr. J. Lockhart Clarke reports a case of cyst of the cerebellum following a traumatism in early life; but Dr. Clarke was not satisfied that the cysts could be attributed to the injury. He also gives, coincidentally, the history of the patient's mother, who had cerebral symptoms apparently dependent upon an accident, and who had a cyst in the central white substance of the cerebellum on each side. Dr. Sharkey reported to the London Pathological Society, June 17, 1881, a case of cerebellar cyst following an injury to the back of the head. The cyst "was not a hydatid, and had no inflammatory thickening of the cerebellar substance around it, nor were there any hæmatoidin crystals or other remains of effused blood." He concludes, "simple cysts of the brain are rare, and their pathology obscure."

In the "Revue de Chirurgie," July 10, 1883, a French surgeon² reports a case of epilepsy with hemiplegia following injury to the head two years previously. The intellect becoming clouded, it was decided to trephine, the instrument being applied to the right side, over the Rolandic fissure. "As the operation proceeded, a crack was seen in the skull, and in the

¹ Reynolds, "System of Medicine," vol. ii, p. 496.

² M. Demous, of Bordeaux.

arachnoid was found a little cyst the size of a pea. This was removed, and the surface of the brain was scraped where it seemed to have undergone some alterations. The epilepsy and hemiplegia disappeared at once, and had not returned at the time of the report, a month after the operation."

An examination of the histories of ninety-nine American cases of brain disease, which are collected, classified, and critically analyzed by Dr. M. Allen Starr, of New York city, in his recent valuable contribution to the study of the functions of the cerebral cortex,¹ reveals not a case of simple, uncomplicated serous cyst.

Finally, inasmuch as the fortunate termination of Dingman's case precluded an autopsical verification of the diagnosis, it may be objected that the history of the case, as given, does not warrant the opinion that this was an instance of simple serous cyst. In reply to possible objections the writer would say, that the opinion as to the nature of the cyst was arrived at partly by the process of exclusion, and is based upon the following grounds, namely: both the gross and microscopical appearance of the serum showed none of the products usually resulting from changes occurring in the seat of circumscribed softenings or old effusions, nor were there evidences of echinococci, cysticerci, or other adventitious products which are known to occur in the brain in cystic form, and the existence of which would almost certainly insure a fatal termination.

¹ "American Journal of Medical Sciences," for April, 1884.

RUPTURE OF THE VAGINA, THROUGH DOUGLAS'S CUL-DE-SAC, AT THE FIRST COITUS.

By R. H. SABIN, M. D., of Albany County.

Read November 17, 1885.

AN early morning summons, on June 29th of this year, brought me to the bedside of Mrs. S., aged twenty-two years, a well-developed woman, of nervous temperament, who was the subject of a profuse hæmorrhage. She was frightened, pale, and faint. On examination, I found the vagina full of clots; these being removed, I next discovered a rent which began at the entrance of the vaginal canal, and extended on the left of the median line backward to and across Douglas's cul-de-sac, continuing upward on the right side of the vagina to about one third of its length. The uterus and bladder were normal. After washing out the vagina with carbolic acid and warm water, I filled it with absorbent cotton wet with the same solution; ordered brandy and perfect rest. There was no further hæmorrhage, and the recovery was complete in about three weeks. The history of the cause was that the patient had been married the evening before, and the injury was the result of the first coitus. The only intimation she had of her condition was a sharp, severe pain, followed by the hæmorrhage.

The case as just recited, which I wish to be regarded as a contribution to the literature of the subject, demonstrates the extreme probability that no undue force was exerted, on the one hand, and that there was present no especial weakness of tissue on the other. Dr. Paul F. Mundé reports two cases of this accident, where the hæmorrhage was dangerous, in one of which the rent "was intra-vaginal, its starting-point merely being the hymen; . . . a deep fissure about an inch long . . .

extended inward from the nick in the hymen to the left and parallel with the urethra." In the second of his cases there was "a deep rent, fully two and a half inches in length and half an inch in depth . . . in the left vagina wall, extending from about an inch above the hymen nearly to the cul-de-sac. The edges of the rent were ragged, and its base bruised and torn."¹

Dr. Mundé, in the summary of his experience, says that "the vaginae were apparently perfectly healthy, both ladies being young and of good constitution." He further calls attention to Dr. Chadwick's case, reported in the "*Boston Medical and Surgical Journal*," April 30, 1885, and comments upon a case of Dr. Zeiss, as quoted by Dr. Chadwick, to the effect that "the recent confinement of the woman, and the adhesion of the cervix to the lacerated side of the vagina, would readily account for the friability of the tissues, as would also the senile atrophy of the vagina in Dr. Chadwick's own case."

"The treatment," adds the writer from whom I have so liberally quoted, "must obviously consist in the tamponade, repeated as long as danger of recurrence exists, or, if the rent is external, where a vaginal tampon can not well touch it, the deep suture."

¹ "*Boston Medical and Surgical Journal*," vol. cxii, No. 22, May 14, 1885, p. 471.

MEDICO-LEGAL BEARING OF PELVIC INJURIES IN WOMEN.

By ELY VAN DE WARKER, M. D., of Onondaga Co.

Read November 17, 1885.

I do not design in the present paper to include in my category of pelvic injuries those incident to the parturient function, but only those which are the usual result of ordinary violence. At the outset of my remarks, I may venture the statement that, while perimetritis and parametritis, with their sequences, constitute the majority of the pelvic diseases from *any* cause, they are by far the most prominent element in damage suits. The defendants are corporations—municipal, village, and railway; of these, city and village corporations are the most frequently sued. “Defective sidewalk, by reason of which the plaintiff was caused to fall,” is one of the main allegations. The falls are usually claimed to be backward upon the sacrum, although in one action now pending the plaintiff did not fall, but made an unexpected descent of eight inches below the general level of the walk. In passing, I may call attention to the medico-legal fact that the plaintiffs are generally at or past middle life. In my own experience, I know of only one who was a young woman.

As the case to which I have just alluded illustrates one of the evils of our present system of expert testimony I shall give it a brief notice. Miss A., while walking upon a plank sidewalk in the village of C., tripped upon a loose board and was thrown forward her full length upon the ground. In the complaint it was alleged that by reason of the fall the uterus was

permanently displaced ; that a severe and dangerous pelvic inflammation caused an abscess which discharged externally ; and that (for she married subsequent to the injury) she was in consequence of all this unable to perform the sexual act. On the day of trial the defense asked that the medical witness be given the privilege of examining the plaintiff. The request was refused, and was not pressed for fear of exciting the sympathy of the jury. The plaintiff, a large, lymphatic blonde, admitted, on cross-examination, that she had suffered from piles for several years, at times so severely as to confine her to bed. Her physician testified that the uterus was "displaced," and that an abscess had formed in the pelvis, and had found exit about half an inch from the margin of the anus ; that the abscess was still discharging, and had so continued to discharge for the period of a year and a half ; and that her troubles began about one month after the alleged injury ; also, that by reason of great pain she is, and had been, unable to perform the duties of a wife ; further, that in his opinion the conditions described were due to the fall. On cross-examination, he stated that he had not examined her pelvic organs critically, owing to the great tenderness, nor had he explored the direction and extent of the fistulous opening near the anus.

In a hypothetical question, the defense endeavored to establish by their medical witness that the plaintiff was suffering from *fistula in ano* the result of previous disease of the rectum, and that a permanent uterine displacement could not result from the fall as described. The jury awarded the plaintiff fifteen hundred dollars. It is obvious that, by such a course of medical testimony, the true condition of the plaintiff could not be shown, since courts naturally shrink from the compulsory examination of women in the case of alleged pelvic injuries. On the other hand, the defense is not anxious to encounter "the jury-box risk," by insisting on an order despite the tears and protestations of the plaintiff.

In every case with which I am familiar, the defense was ever at a disadvantage as regards the facts set forth by the plaintiff. The disposition to color, exaggerate, and distort is of course no-

ticeable in all offered evidence, but never to the same extent as in the pelvic injuries of women.

The following may be regarded as a case typifying the amount of obscurity surrounding these alleged pelvic injuries, even after two lengthy and stubbornly-contested trials. The history I condense from the printed case and from the exceptions of the second trial. I am informed, however, that the suit was settled before it came up again for adjudication. The complaint in this case was that of "Amelia P. against The New York Central and Hudson River Railroad." The plaintiff claimed that by reason of a fall while getting off the cars of defendant, May 21, 1875, she met with serious injury, consisting of dangerous inflammation of the pelvis, and permanent displacement of the uterus. On the Tuesday following, to wit, the 25th, she left her residence at Kirkville for Syracuse, where she consulted an irregular practitioner, who had been in the habit of treating her for prolapsus of the uterus. She informed him of her fall, and stated that should she be taken sick after it she would have him call and see her. She attended church on the following Sunday, and on Thursday, just one week after the injury, she called her Syracuse attendant to see her at Kirkville. He found her in bed, and without examining her advised her to consult a local practitioner, which she did on the succeeding Sunday. He testified that he found, from the middle of the leg up to the ribs on the left side, an extended bruise (ecchymosis), and over the left hip quite a large swelling, the center of which was almost over the hip bone. There was tenderness on pressure, but not so much in the swelling as around it and over the womb. It was with great difficulty that an examination was made, and then the doctor found the mouth of the uterus "somewhat swollen and red, discharging a bloody-water like," and this examination, internal as he styled it, he was not able to repeat until some seven weeks had elapsed. He then found the uterus adherent, out of its "normal position somewhat," and inclined to the left; the swelling over the hip had abated, but "evidently the distention had been so great that the skin on that side had been unable to regain its proper tone."

The expert sworn for plaintiff testified that he found the uterus inclined to the left and fastened by adhesions. No evidence from this source throws any further light upon the condition of the integuments of the abdomen, and of the hip on the left side. He regarded the condition of the uterus as incurable. On his cross-examination, this expert stated that an injury to the thigh would not be likely to produce it, nor would he expect that a person thus injured on Friday would be able to come to Syracuse on Tuesday and be about the streets.

Upon the part of the defendant it was shown by cross-examination of the plaintiff that in the autumn of 1874 she had a fall upon the stairs of her house. This accident necessitated confinement to her bed, as deposed by another witness but denied by herself. The plaintiff admitted, however, that she had been unable to leave her home for "weeks and months before the accident." One witness testified that she saw plaintiff at a party on the evening of Friday, May 21, 1875, the very day of the accident; this the plaintiff in her cross-examination "could not remember whether she did or not." Still she was willing to admit that she went to church on the Sunday morning immediately following.

One of the medical experts sworn by the defendant testified that he visited the plaintiff at her home in Kirkville, on the 7th of January, 1876, and found her sitting up, with normal pulse and temperature. "The ridge over the abdomen," a point never allowed to drop out of sight by the plaintiff, he described as something unlike "anything he had ever seen before," and discovered it to be merely fat in a ridge. He found nothing else out of the way, and made no further examination, as his attention was not called to the condition of the uterus.

It was further shown that the plaintiff had been treated at various times for "weakness," and, according to the direct testimony of one of her physicians, for prolapsus. The stenographer's minutes of the plaintiff's testimony in a former trial were offered in evidence, in contradiction to the plaintiff's statement that "after the accident of 1874 she was confined to her house from November to February." According to these

minutes, she deposed that she "was not confined to her bed but a little ; was up and down, was weak and felt bad." I may say further that the diversity of phrase as used by the plaintiff substantially passed without comment at the trial then in progress. It was also testified that subsequent to the accident aforesaid a truss, of some form not shown, was worn.

I have presented sufficient of the evidence upon both sides to give the character of the case ; and I here offer it, not in any way as exceptional, but for the purpose of giving a fair idea of the tenor of medical evidence in these cases of alleged pelvic injuries in women.

This case just cited was never tried—that is, in the legal sense of bringing out the essential points in such a way as to establish the truth before the jury. The defense to this day, notwithstanding three judicial investigations, know nothing in their own behalf of the actual condition of affairs within the pelvis of this woman. I have selected it for a partial review because of its ordinary occurrence, and because of its medical complexion. It is the average type of the actions at law in which women appear as plaintiffs for damages for injuries of this nature.

The first point that challenges attention is the popularity of these suits throughout the country. Against one city corporation alone there are \$150,000 in litigation, exceeding by considerably more than one half the legal limit of its annual expenditure for all purposes of city government. The costs of defending these suits and the payment of such damages as juries may award are no inconsiderable items in the yearly tax list. When we further consider that inflammation of the pelvic connective tissue and peritoneum forms nearly fifty per cent of the sexual disabilities of women, and that each of these women is peculiarly liable to relapses and exacerbations from slight causes, we can form an adequate idea of the extent to which pelvic inflammation, due to alleged injury, may vex the courts. As important as is this antecedent condition of the pelvis, I have yet to see a litigated case of this nature that failed to give a history of pelvic inflammation previous to the alleged injury. In this way I

account for a large class of cases in which the local condition affords moral grounds for the plaintiff as well as objective symptoms to the examined, and yet so far as the real liability of any corporation in defense is concerned they have not the shadow of a claim. In this group the plaintiffs were sick previous to the injury, and sick, too, in consequence of the very condition for which they ask indemnity; and yet I will allow that they actually believe in the honesty and justice of their claims.

I am reluctant to refer to the second class of plaintiffs in these suits, but a sincere conviction of the vast amount of fraud that exists compels me to speak. In no cases of alleged injury to the nervous system is there a like degree of deliberate, persistent fraud, nay, I hesitate not to go further in my assertion, to the effect that in no other form of litigation is the same amount of successful fraud perpetrated. A woman limping into court on crutches and unfolding a tale of terrible suffering, twelve credulous men with human sympathies, not to say prejudices, and a corporation without a soul, but with an unlimited capacity to pay, are the three elements in the drama to be played. What can expert testimony, common sense, or careful sifting of evidence achieve against the flaunting pathos of smart and unscrupulous counsel? Of what avail is the traditional hypothetical question, at best only an elicitor of opinion, against the mute appeals of woman, or the unconfessed prejudices of the jury?

It is useless to enter any further into details. The methods pursued would be impossible in the matter of any other alleged injury; but I may state it as a rule, that just in proportion as symptoms are obscure and investigation difficult do these cases crowd into court. For these reasons also nervous injuries, made up as they are of certain obscurities, mainly of a subjective character, give opportunity for conflicting interpretations and thereby furnish a pretext for fraudulent claims. In the pelvic injuries of women we, as physicians, have no difficulty in giving to each symptom its just value, provided we know the local conditions in which it has its origin. Their obscurities are due to our ignorance of these, or to the suppression and perversion

of essential conditions previous to the injury. I know of no remedy for the evil, unless courts will insist upon something more than *ex-parte* evidence of the plaintiff's pelvic condition.

I shall now take up briefly a few of the points that belong to the case under review. Great stress was laid by a medical witness of the plaintiff upon the swelling, pain, tenderness, and ecchymosis (irregular black and blue spots) upon the integuments of the side observed by him nine days after the accident. The inference sought to be made was that such serious and extensive injuries, after such a lapse of time, must have been due to direct and extreme violence. It seems to have been an established fact that the plaintiff went to a party the night of the day of the accident, to church the following Sunday, and reached Syracuse the Tuesday after. Therefore, we have a right to assume that she attended to household duties in the intervals of such considerable activity. Some light is thrown upon the character of these external evidences of injury by antagonizing the statements of two witnesses, one that a large "ridge" or fold across the side and lower bowel remained as a lasting result of the extreme tumefaction, and the other, that the phenomenon was simply due to a deposit of fat. In spite of this positive assertion of the latter witness touching the character of this ridge, it was kept constantly before the jury as an evidence of the permanent character of her injuries. By applying the rule that disability from injury of the external soft parts due to violence must be immediate and continuous, we, as seekers after the truth, ought to have data by which we may approximate its true value from a scientific point if not in accordance with the legal estimate.

But it was attempted to prove that this external violence produced the most serious intra-pelvic consequences, namely, pelvic cellulitis, with adhesions and displacement of the uterus. It is worth while to examine these claims separately. Now, I may state it as a fact that no part of the human organism is so well insured against the evil consequences of shock and concussion as the uterus, unless it be the brain and spinal cord. In addition to a bony protection fully equaling that of the spinal

cord, it is still further guarded against concussion by a degree of mobility possessed by no other organ. Now, you are asked to believe that a woman, previously in a state of perfect health, by a fall of two feet sustains such an injury to her side that the resulting tumefaction and inflammation leave permanent folds of distorted tissue; that she has become the victim of permanent adhesions, with lateral displacement of the uterus, marked by such tenderness of the implicated parts that a vaginal examination was impossible for months; that after an interval of nine days she attended a party, went to church, traveled by rail, and, presumably, worked in her household. Such a proposition applied to any other region of the body than the pelvic organs of a woman would exceed the average limits of credulity; but here it is not only believed, but regarded as an expected culmination of events.

I do not believe it is an overestimate to attribute to pelvic inflammation fifty per cent of the sexual disabilities of women: I may say that this is the ordinary experience of the general practitioner, and the daily routine of the gynecologist. Notwithstanding this frequent encounter of such examples, I have never met a case of pelvic peritonitis or cellulitis due to alleged violence that did not come up for legal arbitration. Still, observers must take into account the fact that falls, kicks—injuries of any nature—are popularly believed to have a serious effect upon these organs of women. As it is notoriously the fact that violence is not a common cause of pelvic peritonitis, nor, governed by my own experience, do I believe that, in a healthy subject, an ordinary violence, of itself not jeopardizing life, would produce it, how can I do otherwise than, in the instance under discussion, consider the previous pelvic history as both surmised and proved? Even with due deference to an honest dissent from my views, all must concede that the parts in question can form no exception to the rule that a direct injury must be followed by consequences immediate and at least reasonably apparent. Very slight causes are powerful enough to rekindle inflammation in all these cases, and months of active treatment may be required for restoration to partial health, and there may

be a series of relapses or incomplete recoveries extending over a period of years. Here the slightest accident may turn the scale in favor of the old condition of things.

Other pelvic conditions may actively contribute toward exciting a serious train of consequences. In the case of Coe against The City of Syracuse, the plaintiff stepped off a depression in the sidewalk of eight inches. She did not fall, but received a concussion through the pelvis that caused great pain and pelvic inflammation. Before she recovered from this, hysterical paralysis followed in the left leg, side, and arm, and continued as a recognized cause of disability for three years. The plaintiff laid her damages at \$25,000. An examination proved the uterus to be considerably hypertrophied, with great tenderness upon pressure, but free from adhesions and nearly in a normal position. The cervix uteri had sustained a bilateral laceration, which involved the entire vaginal portion upon the left side. The plaintiff swore that she had been, since the birth of a child twenty years before, in the most perfect health, although she admitted having had a miscarriage a year and a half previous to the alleged injury. The fact of a laceration was not disputed. To the demands of the defense to show the character of the pelvic injury existing previous to the alleged accident, the plaintiff objected, on the grounds of irrelevancy and incompetency, averring that no previous state of disability or of ill health should relieve the defendant from responsibility. In the course of his argument sustaining his objection the plaintiff's counsel admitted having anticipated the line of defense, and had based his case on the ruling of the court in the case of Kent against The Baltimore City Railroad Co., in which it was pointedly held that the health of the plaintiff, being in a state to aggravate and intensify the result of the alleged injury, in no way lessened the liability of the defendant. Judges in other States had held substantially the same opinion. The court in the case under notice held that, while the argument was correct enough, it did not constitute a valid objection to evidence looking to mitigation of damages. The plaintiff recovered only one thousand dollars.

The ruling of the Baltimore judge, if rigidly held to as a precedent, will flood the courts with pelvic cases. It is no argument to say that the roadways of corporations and the vehicles of common carriers are made for the sick and feeble as well as for the strong. But a corporation can not make its sidewalks any safer than to enable a person to stand upright in passing over them. There is an absolute limit to the safety afforded to passengers, beyond which it can not provide. On the other hand there are no limits to the variety of accidents as well as no limits to the character of the results which people in certain proximate conditions of body may sustain. If courts are to follow the lead of the Baltimore ruling, the corollary would follow by a parity of reasoning that people in a state of health favorable or contributory to accident, or that would lead to serious results from injuries that would produce no harmful consequences to the well, ought of themselves to take precautions in some measure according to either their liability or predisposition to serious consequences.

To return briefly to the first case under review. Considerable time was given to show the extent and direction of the alleged uterine displacement. The plaintiff's medical attendant and expert showed that a lateral dislocation of the character claimed was extremely rare; and, being rare, the lay mind could draw but one inference, that its presence was attended by obscure and inevitable dangers. As a matter of fact, I need not remind you that authorities agree that lateral displacements are without significance and originate no symptoms.

In two other cases in which I was connected as a witness, displacements of the uterus, claimed to be due to the alleged accident, were made the specific injury for which damages were claimed. These displacements were claimed by the plaintiff's witness to be incurable, and the source of constant pain and disability. That the normal uterus will displace in a permanent manner, and to a degree that the woman is incapacitated, none will gainsay, but the possibility of an acute flexion, as was claimed in one of the cases, I deny in common with nearly every observer. The faculty of displacement and recoil to its former

position is an endowment of the normal uterus. If it becomes displaced to a pathological degree from falls or concussions, it is because it has lost its power of normal recoil, that is to say, the organ, or its sustaining element, is in a diseased condition.

The entire medico-legal field is a wide one and presents many obstacles to a free investigation. I claim to have opened up a portion only, and, dropping the metaphor, I surrender to others the right of evolution.

DISCUSSION ON PNEUMONIA.

QUESTIONS RELATING TO ACUTE LOBAR PNEUMONIA.

By AUSTIN FLINT, M.D., of New York County.

Read November 17, 1885.

MR. PRESIDENT: It will not, I think, be questioned that acute lobar pneumonia offers points of inquiry which have much pathological interest and practical importance, and that this disease has been judiciously selected by the Committee of Arrangements for the scientific business of our Association as a subject for discussion. Acknowledging the honor of having been requested to open the discussion, I will not consume any time by introductory remarks, but proceed at once to consider briefly a series of questions embracing topics concerning which, at the present time, there are differences of opinion. These questions will be severally discussed by Fellows who have prepared brief papers, and it is hoped that others will be sufficiently interested to engage in the discussion.

I. Is acute lobar pneumonia a primary local inflammatory disease, or is it an essential fever, the pulmonary affection being secondary thereto and constituting its anatomical characteristic?

If the pneumonia be purely a local affection, the fever which accompanies it, and all the phenomena therewith associated, are symptoms of, or secondary to, and dependent upon, the local affection. If, on the other hand, the disease which we call pneumonia be an essential fever, the pneumonic affection is a local manifestation of the disease in the same sense as the characteristic intestinal affection is a local manifestation of typhoid fever.

It is only within a few years that the latter of these two

pathological views has been entertained. Indeed, heretofore, pneumonia has, by common consent, been regarded as typical of a purely local inflammatory affection, and measures of treatment as applied to this affection have been studied with reference to principles which should govern their application to all acute inflammations. In 1877 I read a paper at the Annual Meeting of the New York State Medical Society in support of the doctrine that acute lobar pneumonia is not a purely local affection, but an essential fever.¹ At that time this doctrine had very few supporters in this country, and the same may be said of other countries. The most prominent of the advocates of the doctrine was Juergensen, author of the article on pneumonia in Ziemssen's "Cyclopædia." Since that date the doctrine has been steadily gaining ground, but it is doubtful if at the present time it has been adopted by the majority of those of our profession who undertake to grapple with pathological questions of this character. It is probably true that a large majority of the profession, as a whole, hold to the opinion that the affection is primarily and purely a local inflammation. I suppose it to be true that acute lobar pneumonia is an inflammatory affection—that the pneumonic exudation is the result of an inflammatory process. Some late writers, however, have come to the conclusion that the local affection is non-inflammatory.²

The doctrine that the pneumonic affection is the local manifestation of an essential fever is sustained by facts which distinguish this affection from primary acute inflammations, and which affiliate it with febrile diseases. The more prominent of these facts are embraced in the following enumeration :

1. Acute lobar pneumonia is characterized by an enormous exudation into the pulmonary alveoli, and this exudation may be rapidly absorbed, leaving the tissues intact. This anatomical fact has no analogue in the history of acute primary inflammations. The deposit within the mesenteric glands in typhoid fever is analogous, except that the quantity is much less.

¹ *Vide* "Transactions of the New York State Medical Society," 1877.

² *Vide* article by Dr. John Galt, in the "Louisville Medical News." Sir Andrew Clark regards the exudation as non-inflammatory.

2. Acute lobar pneumonia never persists and becomes a chronic affection. Is this true of any acute primary inflammatory affection?

3. Acute lobar pneumonia is never referable to any appreciable local condition, nor is it possible, by any form of traumatic injury, to produce this affection.

4. The ordinary causes of disease are not capable of producing acute lobar pneumonia. The traditional belief that the affection may be caused by cold has no solid foundation, and is now abandoned even by the Germans, who have been accustomed to reckon cold as the great etiological factor in many affections.

5. That a special or specific cause is involved in the causation of acute lobar pneumonia, is rendered probable by its occurrence especially at certain seasons of the year, by its relatively greater frequency in certain climates, by its infrequency in infancy, and by its prevalence at certain times and places as an endemic disease.

6. Acute lobar pneumonia differs from an acute primary local inflammation in the occurrence, as a rule, at the outset, of a pronounced chill comparable to that which announces a malarial paroxysm. This fact distinguishes it from an acute primary local inflammation.

7. In the course of the disease the temperature and associated febrile phenomena bear no constant relation to the local affection. In this respect the disease is in affiliation with a self-limited fever, and differs from an acute local primary inflammation.

8. Experience shows that acute lobar pneumonia is influenced therapeutically by measures addressed to the fever rather than to the local affection.

II. What facts and rational grounds, with our present knowledge, can be cited in support of the doctrine that acute lobar pneumonia depends on the presence of a specific micro-organism?

Changing the form of this question, it is, What proof have we, at the present time, of the truth of the assertion that acute lobar pneumonia is a parasitic disease?

I shall not enter into any discussion of this question. The question will be answered by one fully competent to consider it. I may state, however, the essential requirements for accepting the parasitic doctrine as applied to any disease.

First, a particular micro-organism must be uniformly present in cases of the disease. *Second*, it must be shown that this organism is not present in other diseases, nor in the healthy body. *Third*, pure cultures of the organism must be found capable of producing the disease when introduced into the bodies of healthy animals.

It is claimed by Carl Friedländer and others that these requirements have been fulfilled as regards the disease under consideration. The facts on which this claim rests will be presented by my colleague Professor Janeway.

III. What conditions or circumstances incident to acute lobar pneumonia tend to render the disease fatal?

Some twenty or more years ago the late Dr. Hughes Bennett published a monograph in which he maintained that acute lobar pneumonia has no tendency *per se* to a fatal termination, death being in all instances due to complications. This conclusion was based on examinations after death in hospital cases. Co-existing lesions were invariably found to which a fatal result was attributable. As a general statement, I believe it to be true that this disease, disconnected from associated affections or lesions, and, I will add, exclusive of certain events which may be called accidents, intrinsically tends to recovery. If this be a true statement, it is obviously of much importance to consider what are the conditions or circumstances incident to, but not necessarily connected with, the disease, which tend to render it fatal. This question opens a field which I can only cursorily survey in this paper.

Pneumonia is not infrequently secondary to diseases which are more or less grave, such as typhoid fever, rubeola, pertussis, valvular lesions of the heart, renal disease, etc. Under these circumstances it is not the pneumonia but the combination which kills. Again, the disease, in some instances, appears to act as an exciting cause of other disease. We all know how

often delirium tremens is developed after an attack of pneumonia. The malarial miasm seems not infrequently to be excited into activity by an attack of pneumonia. Grave complicating affections directly incident to the disease, are empyema, pulmonary gangrene, abscess, and pericarditis, although happily these complications are not of frequent occurrence.

Apart from antecedent and consequent affections, the conditions or circumstances which tend to render pneumonia fatal relate especially to the heart. Although the disease compromises, in a greater or less degree, the respiratory organs, a fatal ending, as a rule, is by asthenia, or, as it is customary now to say, by heart-failure. Connected with this heart-failure, either as a cause or an effect, or as both, in a large proportion of fatal cases, is thrombosis in the right cavities of the heart. I have been led to this conclusion by observations at the bedside conjoined with autopsical examinations, continued through many years. I pass by the consideration of the rationale of cardiac thrombosis in connection with pneumonia, and of the symptoms which denote the occurrence of a heart-clot. I shall content myself with the single statement of the conclusion just stated. If this conclusion be correct, it follows that the chief objective point in the treatment of pneumonia relates to the conditions or circumstances under which heart-failure and cardiac thrombosis are liable to occur.

IV. Are there known remedies or therapeutic measures capable of arresting this disease, or of exerting a curative influence by either shortening its duration or conducing in any way to a favorable termination?

Does experience show that by any method of treatment this disease can be made to abort, or that a direct curative effect can be produced? I believe this question may be answered affirmatively. My own experience, as well as the testimony of others, has led me to conclude that quinia in full doses sometimes arrests the progress of the disease, and that, if not arrested, the course of the disease is favorably modified by this drug. I am not prepared to submit statistics as the basis of this conclusion; but I have notes of a certain number of cases in which either

arrest or a favorable modification of the disease by means of this drug seemed to be a fair inference. Of course, in drawing such an inference, allowance is to be made for an abortion of the disease and a favorable course, as results of an intrinsic tendency. I believe that we may assume it to be extremely rare for this disease to abort spontaneously; but I am by no means prepared to say that it may not infrequently have a favorable course and a short duration irrespective of any measures of treatment.

I shall offer some remarks on blood-letting in connection with the question which has special reference to this measure of treatment.

Remedies which formerly were considered as having a curative influence in cases of pneumonia are calomel and antimony, the latter carried to the limit of tolerance, and the former sometimes given to the extent of producing ptialism. These remedies, within late years, have fallen almost completely into disuse. It is an interesting inquiry whether past experience was wholly at fault with regard to the efficacy of these remedies, but the limits of this paper admit of only this brief reference to them.

The observations of Dietl, published in 1851 and 1853, had much to do with bringing into disrepute the use of calomel, antimony, and blood-letting in the treatment of pneumonia. Dietl reported the mortality from this disease in seven hundred and fifty cases observed in the great hospital at Vienna, the treatment consisting of gum-water and ptisans containing opium, or an expectorant. Of these seven hundred and fifty cases, six hundred and eighty-one recovered, the mortality thus being a little over 9 per cent. Of the fatal cases none were exempt from complications. Dietl also reported eighty-five treated by bleeding, of which, seventeen, or one in five, died, and one hundred and six cases treated by tartar emetic, without bleeding, of which, twenty-two, or one in 4.08, died. Rason, of Geneva, who originated the treatment with large doses of antimony, reported a mortality of fourteen out of one hundred cases.

In the cases in which the treatment consisted of gum-water with anodyne or expectorant ptisans, the disease may be considered as having been very nearly left to pursue its natural course. The rate of mortality was proof of an intrinsic tendency in the disease to end favorably, irrespective of complications. But, it is to be remarked, this conclusion is not inconsistent with the supposition that calomel, antimony, and blood-letting might have been useful in some of these cases. Statistics may be made of great value in determining the relative efficacy of different methods of treatment; but we are to bear in mind that an active therapeutic measure, which may have increased the mortality in a large collection of cases, may have saved some lives out of this collection; and we are to bear in mind that in the practice of medicine we deal with individual, not with aggregated, cases of disease. A method of treatment employed indiscriminately may be injurious in aggregated, but useful in individual, cases. All potential measures of treatment are potential for either good or harm, and, in general, whether they are useful or hurtful depends on the discrimination with which they are employed. Hence it may be said that the art of medicine is the adaptation of general principles of therapeutics to the peculiarities of individual cases.

I should perhaps refer to *veratrum viride* as a remedy for cutting short or exerting a curative influence in cases of pneumonia. I have, however, so little knowledge of this remedy, based on personal observations, that I shall not venture an opinion as to its value in the treatment of this disease.

In conclusion, with the exception of one remedy, viz., quinia, the efficacy of which is limited, I am not prepared to advocate any method of treatment with reference to a special controlling influence over acute lobar pneumonia. This is by no means saying that active measures of treatment are never called for in cases of this disease; but, taking into view the intrinsic tendency of the disease to recovery, therapeutical indications are to be derived chiefly from the conditions or circumstances incident to individual cases.

V. Is blood-letting ever indicated in this disease, and, if so,

what are the circumstances indicating and contra-indicating this measure of treatment?

This question opens up a large field for discussion, but within the scope of this paper I can not do much more than express my own views in brief terms.

Half a century ago, as I can testify from personal observation and experience, blood-letting in pneumonia was considered by the profession in all countries as a *sine qua non* in the treatment of acute lobar pneumonia. Blood-letting in this disease was practiced without discrimination, and, as a rule, under all the conditions and circumstances incident to the disease, without much limitation. Hoyle, in his work on the art of playing the game of whist, laid down the rule that it is wise to play a trump whenever the player is in doubt. Blood-letting was the trump card in the treatment of all inflammatory affections, and somewhat analogous to the rule laid down by Hoyle, was a favorite maxim half a century ago, namely, "whenever in doubt use the lancet." As we all know, to-day blood-letting is very rarely practiced in cases of pneumonia. The mutability of opinions in medicine is perhaps in no other instance more strikingly illustrated than by the contrast between the present and the past as regards blood-letting.

In 1828 Louis published in the "Archives générales de médecine" researches on the effects of blood-letting in some inflammatory diseases. His article in the journal just named was afterward published as a *brochure*. A translation by Dr. C. G. Putnam, with a preface and appendix by James Jackson, was published in this country in 1836. Jackson, in the appendix, gives the result of the analytical study of thirty-four cases of pneumonia treated in the Massachusetts general hospital. The researches by Louis embraced the study of blood-letting in pneumonia, following the numerical method of investigation which he inaugurated. The results of this study are contained in the following quotations: "1. That blood-letting has a happy effect on the progress of pneumonia; that it shortens its duration; that this effect, however, is much less than has been commonly believed; but that patients bled during the first four days re-

cover, other things being equal, four or five days sooner than those bled at a later period." "2. That pneumonia is never arrested at once by blood-letting, at least not on the first days of the disease."

The cases studied by Louis were seventy-eight in number. Of these cases twenty-eight proved fatal. "All the patients were in a state of perfect health at the time when the first symptoms were developed."

Louis's comparison of cases, in regard to the duration of the disease, was limited to the fifty cases ending in recovery. He did not compare the results of the analytical study of these cases with an equal number of similar cases in which no other measures of treatment were employed. In 1828, such a collection of cases could not have been obtained. The mortality in his cases was large (twenty-eight out of seventy-eight), but he does not draw any inference therefrom as to the effect of blood-letting upon the death rate. He could not do this, inasmuch as, at that time, the course of the disease unaffected by any active measures of treatment had not been studied. He studied the effects of blood-letting on the different symptoms, and, quoting his words, he says, "Thus the study of the general and local symptoms, the mortality and variations in the mean duration of the pneumonia, according to the period of which blood-letting was instituted, all establish narrow limits to the utility of this mode of treatment." With the knowledge of the natural history of the disease which we now possess, he might have added that blood-letting, in the cases which he studied, contributed to the rate of mortality.

At the time of the publication of the researches of Louis, his labors, and the numerical system of investigation which he had inaugurated, were held in such esteem in this country, especially in the New England States, that the results of his study of blood-letting had much to do toward awakening distrust of this measure of treatment. The writings of Marshall Hall and the study of blood-lesions by Andral and Gavarett promoted this distrust. As regards its effect upon the blood, blood-letting came to be considered a *spoliative* measure, and the term *spolia-*

tive had not a little influence in calling attention to the injury which this measure may produce.

Thirty years ago, as a writer and teacher, I was in sympathy with those who were in rebellion against the indiscriminate and excessive employment of blood-letting in pneumonia and other inflammatory affections. At the present time my sympathy is with those who believe that past experience was not altogether in the wrong in the employment of blood-letting; that it is a potential measure which, with proper discrimination, may be potential for good, as it is undoubtedly potential for harm if employed without proper discrimination, and, therefore, that its disuse at the present time is an error, as its excessive use heretofore was erroneous. That the time is not far distant when a reaction in favor of this measure will take place, I do not doubt. The indications of such reaction are now apparent, and in the medicine of the future blood-letting will assume its proper place as a valuable therapeutic agent in the treatment of certain morbid conditions.

Notwithstanding the conclusions of Louis, deduced from the histories of fifty cases of pneumonia ending in recovery, I believe that blood-letting in some instances arrests the progress of this disease. This belief is based on my own observations. It is, however, true that the instances are so rare that we are not justified in resorting to the measure for that object whenever there is reason to suppose that if not successful the measure will be hurtful. That in certain cases it shortens the duration of the disease I do not doubt, and a rational conclusion, in my opinion, is that, securing its benefits and avoiding its evils, it may conduce to a favorable termination of the disease. If asked in what way blood-letting exerts an influence directly upon the disease, I have no answer to give; and a sufficient reason for inability to answer this question is the want of knowledge of the essential nature of the disease. The evidence for and against the measure in this disease must be based purely on experience. But the indirect agency of blood-letting is perhaps measurably intelligible. The lesions of pneumonia constitute an obstacle to the free circulation of blood through the pulmonary organs.

The result is an overloading of the right cavities of the heart. Heart-failure and thrombosis are probably in part due to this result. The abstraction of blood obviates, to a greater or less extent, this result. Regarded in this point of view, blood-letting is directed, not against the disease *per se*, but against a dangerous condition incident to the disease, and, therefore, its influence may be said to be indirect. It seems to me a reasonable supposition that the abstraction of blood may lessen the liability to the invasion of a second or third lobe of the lungs, and that it may, also, lessen the amount of exudation when the affection is limited to a single lobe.

Resisting the temptation to enter into a discussion of the *modus operandi* of blood-letting, I proceed to refer, very briefly, to the indications and contra-indications for its employment. It is to be employed early, before the heart has become weakened and the vital powers much diminished. The symptomatic indications are pain and dyspnœa, associated with fullness of the systemic veins and a *pulsus fortis*. Bearing in mind the potential character of the measure, although I am ready to admit that its dangers are at the present time overestimated, it is contra-indicated by certain antecedent affections and complications, such as typhoid fever, rubeola, delirium tremens, and by the anæmic condition. The fact that acute lobar pneumonia is an essential fever does not contra-indicate this measure, for this is a fever which has a short duration, and it is not therefore so important to take into account the remote consequences of the measure as it is, for example, in cases of typhoid fever.

VI. Is alcohol useful in the treatment of cases of acute lobar pneumonia, and, if so, what are the indications for its use, and how is its use to be regulated as regards the quantity given, etc.?

My remarks with reference to this question must necessarily be few, but I desire that they be emphatic. For more than thirty years, my teaching and practice have been in accordance with the belief that alcohol is the great factor in what is known as the supporting treatment; that this treatment is indicated wherever, in any acute disease, the symptoms denote danger in the direction of asthenia or exhaustion, and that the indication

is urgent in proportion to the degree of danger in that direction. There are no reasons why these therapeutical principles are not to be considered as applicable to acute lobar pneumonia as fully as to any other acute affection.

The indication for alcohol exists whenever the symptoms show a tendency to heart-failure. If there be doubt as to the existence of the indication, it is better to commence the use of alcohol tentatively than to delay, because the tentative use can not do harm, and the time which is lost after its use is indicated, can not be recovered. By the expression tentative use, I mean giving a sufficient quantity to produce an effect, and observing the effect upon the action of the heart and other symptoms.

The increased tolerance of alcohol in this disease, as in some other diseases, is a most important point to be considered. There is no rule with regard to the tolerance applicable to all cases; it must be determined in each case by tentative use. In this disease, as in other diseases, the acquired tolerance is marvellous. I have notes of a case observed in 1857—the patient an infant of fourteen months, the disease following pertussis—in which at one time the pulse was 200 and the respirations were 120 per minute. A speedily fatal termination was looked for. Under these circumstances, in addition to the carbonate of ammonia two ounces of brandy were given hourly, and under this use of alcohol the pulse and respirations diminished. The child recovered, and apparently life was in this instance saved by alcohol. I refer to this case as illustrating an enormous increase of the tolerance of alcohol, not, by any means, as an example of the quantity which is generally to be given. This quantity is to be determined in each case by the urgency of the indication and the character of the effect. As in peritonitis the doses of opium are to be determined by the effect without regard to quantity, moderate doses being sufficient in some cases, and in other cases doses almost incredibly large being required, so in pneumonia little or no alcohol may be indicated in some cases, whereas in other cases the increased tolerance may require a quantity which in health would produce grave toxic effects. In this disease, as in all diseases in which alcohol is indicated

as a factor in the supporting treatment, the therapeutic effect never involves any of the phenomena of alcoholic intoxication. It would not be expected that I should enter into details in regard to the employment of alcohol, such as the form to be preferred, the intervals with which it is to be given, etc. Still less will it be expected that I should consider the abuse of alcohol by persons in health. With regard to the latter, I will remark that temperance and total abstinence in health have nothing to do with the use of alcohol as a therapeutic agent, at least in acute diseases. As it seems to me, it is desirable to obtain all the benefit possible from alcohol in therapeutics, as, in some measure, compensatory for the evils to which its non-therapeutic use gives rise.

VII. To what extent is it safe and useful to employ antipyretic measures of treatment in case of acute lobar pneumonia, inclusive of the cold bath, sponging the body, or the wet sheet?

Whether or not hyperpyrexia in the essential fevers is in itself a pathological factor having the importance which of late years has been attributable to it, and how important an object it is to reduce a high temperature in these diseases, are inquiries admitting discussion. I do not, however, purpose to discuss these inquiries. The question before us is, *first*, whether it be safe to employ in cases of acute lobar pneumonia those antipyretic measures which are now so largely employed in other essential fevers, and, *second*, what facts have we which attest their utility in this disease?

Quinia in full and large doses has been much used as an antipyretic remedy in cases of pneumonia. That, when used within proper limits, it is safe and sometimes useful, will, I think, be generally admitted by those who have studied its effects. That it is an uncertain remedy as regards an antipyretic effect will also be admitted. I have no available data for arriving at a conclusion as to the proportion of the cases in which it is useful, and as to the extent of its usefulness, regarded as an antipyretic remedy. A collection of clinical facts with reference to these points is a desideratum. Of other remedies, some of which have been recently introduced, for example the so-called

antipyrin, I am less able to offer any conclusions than with respect to quinia. I shall pass by internal antipyretic remedies with these few remarks. I do so the more readily because there are members of our Association who will, as I hope, engage in the discussion of this question, from whom may be expected opinions based on a more careful study of these remedies than I have given to them.

Of the external employment of cold in cases of pneumonia, I have had some experience. I reported for "*Gaillard's Medical Journal*," March, 1881, three cases in which the treatment consisted chiefly in the efficient employment of cold as an antipyretic agent. I am not aware of any cases having been treated in this country by the application of cold water to the entire surface of the body prior to the publication of my report, nor have I met with report of cases since that time.

The method of treatment pursued in these cases was as follows: The wet sheet was employed whenever the axillary temperature exceeded 103° Fahr. The patient was wrapped in a sheet saturated with water at a temperature of about 80° Fahr., the bed being protected by an India-rubber covering. Sprinkling with water of about the same temperature was repeated every fifteen or twenty minutes. If the patient complained of chilliness, he was covered with a light woolen blanket which was removed when the chilly sensation had disappeared. In none of the cases was the blanket used much of the time while the patient was wrapped in the wet sheet. The patient remained in the sheet until the temperature in the mouth fell to 102° or lower, care being taken to watch the pulse and other symptoms. When the temperature was reduced, the wet sheet was removed and resumed if the temperature again exceeded 103° Fahr. In the cases selected for this treatment, the disease was in an early stage, the patients apparently robust, the pyrexia considerable or high, and no complications existing.

I may here remark that to secure all the desired effects of the employment of cold water externally as an antipyretic measure the method just stated is amply sufficient. The cold bath may always be dispensed with, and in many cases systematic,

prolonged sponging of the surface of the body will accomplish all that is to be desired. The bath tub is inconvenient, and patients generally submit to this method of refrigeration with repugnance. The fatigue of being placed in and taken out of the tub is not a trivial objection.

In the article contained in "Gaillard's Journal," three cases are reported with full details. I shall here give only a summary of each of the cases :

CASE I. "The patient entered the hospital on the third day after the attack. On the day of his entrance the wet sheet was employed thrice. He remained in the sheet the first time two hours and forty-five minutes ; the second time an hour and a half, and the third time an hour and ten minutes. On the second day the wet sheet was employed once, and continued for an hour. On the third day the wet sheet was not employed, the temperature not rising above 103°. On the fourth day the wet sheet was employed once and continued for an hour. There was complete defervescence on the fifth day, and no return of the fever afterward. Dating from the attack to the cessation of the fever, the duration of the disease was seven days. The patient had no treatment prior to his admission into the hospital. The treatment in the hospital, in addition to the wet sheet, consisted of carbonate of ammonia in moderate doses, whisky given very moderately, and a little morphia. The patient was up and dressed five days after the date of the defervescence. There were no sequels and the patient was discharged well."

CASE II. "The patient entered hospital seven days after the date of the attack. She had had no medical treatment prior to her entrance. The wet sheet was employed on the second day after her admission and continued for six hours. Complete defervescence took place on the third day. Recovery followed without any drawback. Both lobes of the left lung were involved in this case. The invasion of the second lobe was probably about the time of her admission into the hospital."

CASE III. "The patient entered hospital three days after he was obliged to give up work. On the day of his entrance the wet sheet was employed and continued for ten hours. The wet sheet was employed on the second day after his admission and continued

for five hours. Defervescence took place on this day. The duration of the fever was five days, dating from the time he was obliged to give up work, and seven days from the occurrence of a chill and pains in the chest."

Quoting my comments on these cases, "They certainly show that in cases like those which were selected, the treatment is not hurtful. More than this, they render probable the inference that the disease was controlled and brought speedily to a favorable termination by the treatment. They also go to show that the disease is essentially a fever, and that treatment is to be directed to it as such, and not as a purely local pulmonary affection. It remains to be determined by further observations how often and to what extent this method of treatment has a curative efficiency. It is also an important object of clinical study to ascertain the circumstances which render the treatment applicable to cases of pneumonic fever, and, on the other hand, the circumstances which may contra-indicate its employment in this disease."

As an addendum to the article in "Gaillard's Journal," I reported a case which is of interest as showing that prolonged exposure to cold may not affect unfavorably the course of acute lobar pneumonia. The facts in this case are as follows: A workman, aged nineteen, was admitted into hospital on February 21st. His illness dated from February 18th. It began with a well-pronounced chill, fever, headache, pain beneath the left nipple, cough, and general prostration. Being without a home, he spent the time from the 18th of February to the morning of the 21st of February in a lumber-yard, without food, and with no shelter but a pile of boards. During this time there was a snow-storm of considerable severity, and the temperature fell as low as 10° Fahr.

On admission to the hospital the pulse was 122, the respirations 52, and the axillary temperature a fraction over 102°. Over the lower lobe of the left lung there was dulness on percussion, increased vocal fremitus, bronchophony and bronchial respiration.

The treatment consisted of whisky, 3 ss., and carbonate

of ammonia, grs. v, every two hours, with a milk diet. On the fourth day after his admission, the axillary temperature was a fraction over 98° , and the physical signs denoted progress in resolution. On the eighth day after his admission the patient was up and dressed.

VIII. Do relapses of acute lobar pneumonia ever occur during or shortly after convalescence, and does this disease involve any special liability to other diseases or sequels?

A few words will embrace all that I shall say with reference to this question. I have no record of a case, nor can I recall any instance in which a relapse of this disease occurred, either during or shortly after convalescence. Assuming that there is no tendency to relapse, this fact is in favor of the doctrine that the disease is an essential fever, inasmuch as relapses of purely local inflammatory affections are liable to occur. The fact has an obvious bearing on the treatment of patients during and after convalescence for pneumonia. Precautions as to diet, exercise, and exposure to cold, which are generally considered as advisable during convalescence, or shortly after recovery from purely local inflammations, are not called for in this disease. Pneumonia, however, does not extinguish the susceptibility to the special cause or causes of this disease. In this respect the disease differs from certain other essential fevers, namely, typhus and typhoid fever, yellow fever, and the eruptive fevers.

Acute lobar pneumonia differs from certain of the essential fevers in the absence of any special tendency to other diseases or sequels. The opinion appears to be somewhat prevalent that this disease involves a liability to pulmonary phthisis. Niemeyer inculcated this opinion. Louis's researches, more than half a century ago, demonstrated the absence of any special tendency to that affection, and later researches have led to the same result.

QUESTION I.

IS ACUTE LOBAR PNEUMONIA A PRIMARY LOCAL INFLAMMATORY DISEASE, OR IS IT AN ESSENTIAL FEVER, THE PULMONARY AFFECTION BEING SECONDARY THERETO, AND CONSTITUTING ITS ANATOMICAL CHARACTERISTICS?

DISCUSSED BY

HENRY D. DIDAMA, M. D., of Onondaga County, and
F. W. ROSS, M. D., of Chemung County.

DR. H. D. DIDAMA.

THREE views regarding the nature of acute lobar pneumonia have prevailed at different times :

I. *Hyperinosis and Depuration*.—One is that, preceding the pneumonic attack, there is an augmentation of the amount of fibrin and the presence of some unknown morbid element in the blood.

This hyperinosis increases till it produces certain prodromes, such as malaise, nausea, headache, etc. At length the nervous system becomes involved, and an explosion occurs in the form of a decided chill, with accompanying and following elevation of temperature. The lungs have a special affinity for this morbid blood, as the joints and fibrous tissues have for the poisoned and hyperinotic blood in rheumatism. An exudation of the excess of fibrin and of the morbid material into the air-cells takes place. The blood being purified by the process, the pyrexia ends. The exudate is, after fatty degeneration and saponification, absorbed into the blood and eliminated by the kidneys.

The objection to this hypothesis is that it assumes, what is not proved, the pre-existence of hyperinosis. Now, this increase

of fibrin does certainly exist after the disease is established; but it is an effect and not a cause. In the rapid tissue-metamorphosis of the lung in pulmonary inflammation, fibrin, as is justly claimed, is produced in great amount. A portion of this is conveyed into the blood, producing hyperinosis, and running up the percentage from three, the normal amount, to ten or more.

But the production is so rapid that the whole amount can not be carried into the blood by the lymphatics as fast as it is formed. The balance is exuded into the air-cells.

Instead of the blood being purified by the process, as it is in gout by the excretion of urate of soda, the amount of fibrin in the blood, after the lung becomes consolidated, is actually greater than before the inflammation commenced. If hyperinosis could cause pneumonitis, then in this case there should be a rapid spreading of the disease, till the entire lung-substance became involved.

In acute rheumatism, hyperinosis, produced by the metamorphosis of the fibrous tissues and the absorption into the blood of the resulting albuminous material, is a marked feature. But it does not produce pneumonia.

II. *The Inflammatory Theory.*—Another view is that pneumonia is a phlegmasia arising from the ordinary causes of inflammation. An aptitude may be the result of continued exposure to bad air, exhausting mental or physical labor, sexual excesses, and the like. The outbreak may be from chilling the surface, wholly or in part, and from other exciting causes.

The inflammation runs its course, as a pleurisy or other phlegmon does, the fever subsides, and the disease ends. In pleurisy, an effusion of serum remains after the subsidence of the febrile symptoms. In pneumonia the air-cells become plugged with a fibrinous exudation, and this exudation, from the necessity of location, remains for a considerable time after the inflammatory process has resolved.

But the ordinary causes of inflammation do not seem sufficient to produce lobar pneumonia. In this respect it is in marked contrast to bronchitis. Sailors, exposed to the inclemencies of the ocean, do not contract it. Soldiers, in the field,

lying on the damp, cold ground, escape it. It diminishes rather than increases as one goes into the frigid northern regions. Inhalations of acrid vapors never induce it. It can not be produced experimentally.

Traumatic injuries of the chest—even when a large section of the parietes is removed by a gun-shot wound, and the lung itself is seriously implicated—are not followed by the pulmonary disease under consideration.

Pneumonia differs from ordinary inflammations in having a severe chill as its first prominent manifestation; a temperature disproportioned to the amount of tissue involved, and in having a well-defined course, ending in a sudden defervescence. Contrast it in these respects with peritonitis, pleurisy, and inflammation of the liver or kidneys.

III. *The Fever Theory.*—A third view is that lobar pneumonia is primarily an essential fever, the pulmonary inflammation being a secondary and local manifestation of the systemic disease. Measles and scarlatina are general diseases having a local manifestation. This manifestation is inflammatory in small-pox, typhoid, and cerebro-spinal fevers. The belief seems to be gaining ground that all primary fevers, whether communicable or not from one person to another, are of germ origin. Malarial fevers are included in the list.

There are good reasons for regarding pneumonia as infectious and even occasionally contagious. This part of the subject will be examined, and the nature of the infecting material—if it exist—demonstrated later in this discussion.

If a constitutional infection be the primary condition in pneumonia, why should the lungs alone be affected? Why one lobe only or one lung? are not both lungs alike exposed to the contaminating circulation?

It is thought by some pathologists that each specific organism has its special habitat or nidus. The glands of the intestines are the favored spots in typhoid; the meninges in cerebro-spinal fever; the throat in diphtheria; the skin in the exanthems; the lungs in pneumonia.

No satisfactory reason has been given why certain of the

glands should escape in enteric fever and others be affected; nor why the chief manifestation in spotted fever should be near the junction of brain and spinal membranes; nor why glanders, when inoculated at some distant point, should exhibit itself mainly about the nose.

In most of the general fevers which have a local expression, many organs are more or less implicated. The same may be affirmed of pneumonia. The kidneys, the liver, the spleen, the heart, are often involved.

Assuming that the infecting material is a germ—bacteridian or other—development under favoring conditions may be rapid; the nervous system, especially the nerves connected with the heart and lungs, may be affected early, causing flushing and cyanosis; and the very inflammatory action excited in the lung may end the life of the numerous infecting invaders and the disease at the same time.

Objections to the theory of a pneumonic fever have been and can be raised. One is that in essential fevers there is a diminished amount of fibrin in the blood, while in pneumonia there is an enormous increase. This objection would be fatal if it were unanswerable. But Andral observed that when, in the course of a primary fever, inflammation sets in—in the pustular stage of variola, for instance—the fibrin is greatly increased. And, as we have seen already, there is no evidence that hyperinosis exists in pneumonia till after the inflammation of the lungs sets in. Another objection is that one attack of essential fever exhausts the susceptibility of the patient, while an attack of pneumonia predisposes to a recurrence. The objection has some force, but the rule is not universal. An attack of diphtheria in which the constitution becomes affected does not exempt from a subsequent attack. The same is true of cholera, erysipelas, and ague.

Regarding the prodromes, which were shown to exist in seventy-five per cent of a thousand cases of pneumonia, investigated by a committee of the British Medical Association, Germain Sée remarks that these are present in every case of local phlegmasia, “even in a prick or abrasion of the finger.”

That pain accompanies a prick is within the experience of everybody; and that the nervous system may be disturbed by even a trifling abrasion is not to be denied; but it is a misuse of language to call this slight pain or transient disturbance a prodrome. If a nerve be severely injured by the prick, serious results may follow. So if the abrasion be contaminated by septic material, violent general symptoms may be manifest, and the local trouble may be greatly aggravated. But in this instance the premonition is an indication and result of constitutional infection. Furthermore, the British Investigating Committee report that phenomena of pneumonia may show themselves with no lung implication whatever.

The limit of this paper forbids further examination of the objections urged by Sée and a few other writers. Sée, while denying that pneumonia is a general disease, admits that it is infectious.

The question can not be considered finally settled so long as eminent authorities differ; but the arguments presented by Traube and Juergensen, and so ably illustrated and amplified by our admirable and eminent colleague Flint, seem fairly to establish the doctrine that *acute lobar pneumonia is an essential fever with a secondary pulmonary affection.*

DR. F. W. ROSS.

I believe acute lobar pneumonia can be placed in its proper class, by a study of the natural history of the disease, as well as by the study of its constant pathological lesion. To do this in the proper spirit of investigation we must divest our minds of the prejudices inculcated by early authorities, and betake ourselves to more accurate methods. Even amid the confusion of theory we find some facts, and upon these we must build.

In a disease like the one under discussion, with, as I have said, a definite history and a constant pathological lesion, we would hardly expect the question to arise in regard to its exact status in nosology. Yet I know of no moot point in medicine which is more debatable.

As characteristic as is this malady, and as uniform as it is in

its behavior, we still hesitate on the very threshold of our opinions as to whether it is a constitutional disease, with a local lesion, or a primary local disease affecting the system secondarily. Disputants on both sides are equally dogmatic and equally positive. As regards the drift of opinion, do I overstate it when I say that nine out of ten of my brother practitioners unhesitatingly pronounce in favor of pneumonia being a local disease, and yet, when challenged for the reason of their faith, are only too willing to make qualifications? Yet, notwithstanding the adverse majority, the more I investigate, the more I am convinced that the malady in question is an essential fever, with a local lesion. In support of my own views allow me to present the following indisputable facts, deducible from its clinical history:

1. The onset of a case of acute lobar pneumonia is distinct and well marked.
2. Like other essential fevers, it selects by preference certain ages and conditions.
3. The severity of the fever bears no direct ratio to the amount of lung-tissue involved.
4. The danger to life is out of proportion to the pulmonary lesion, save only in those cases in which a large amount of lung is crippled; it then acts mechanically, as a hydrothorax would, by preventing a free oxidation of blood.

The severity of the fever and its influence are likewise the great factor to be considered in the prognosis, even though the amount of lung-tissue involved be but very slight in extent. Again, we not unfrequently find extensive blood changes and tissue metamorphosis, not at all in keeping with a slight pulmonary lesion. Still another fact I desire to point out, to wit, when the temperature falls, with the same unchanged amount of crippled power, the poison of the fever has spent its force, and the patient is on the road to recovery.

What has caused this change? The lung is evidently the same, notwithstanding the improvement in both respiration and temperature; can we say that the pneumonia was merely a local affair, or that the action of the poison on the system originated an essential fever, in which the lung lesions were a result and not a cause of the constitutional disturbance?

In all fairness, I do not desire to slightly pass an objection, looming up no doubt in the minds of some, and that objection is in regard to traumatism, or the chronic stasis in low fevers, both of which conditions are not to be confounded with acute lobar pneumonia.

Dr. Fred. T. Roberts, of London, Eng., indorses this view, as follows: "I think all will agree that the pneumonia which occurs in the course of other diseases is not an acute croupous pneumonia, but a local inflammation, caused by some abnormal state which the pre-existing disease has induced, or the long continued congestion causes, the local condition which is in no sense a true pneumonia."

Here, although the writer does not distinctly aver that the disease is a constitutional fever, he more than hints that it is, and probably would subscribe to the growing professional doctrine. Again, and here I wish to make a point of some importance, a true croupous pneumonia can not be artificially induced. So, too, a constitutional fever must be among the phenomena, if the disease be due to a specific micro-organism, or a specific poison, like diphtheria, or typhus fever. Another untenable position lies in the condition of the heart, which, more than that of the lungs, is a guide to the prognosis, for, whenever we find the fever low and the pulse not too high, we expect a good recovery.

Another argument in favor of the specific theory lies in the therapeutical measures. Local remedies are of little value in checking or arresting its progress. I think that no one expects to abort an acute pneumonia. It must have its run, when once fairly under way, subject only to the modifications of whatever treatment may be adopted.

Bear in mind, also, that in seventy-five per cent of cases of pneumonia the right lower lobe of the lung is invaded. Yet there is no known anatomical or physiological reason why this selection should be made above all others, except by adopting the analogy that certain fevers select special parts or divisions of anatomical structures for their local manifestations. We recognize these conditions as the almost constant lesion of the dis-

ease. Can we any better penetrate the mystery why small-pox should select the face in general, or the malar portion thereof in particular, for the first appearance of the pustules? Or why diphtheria prefers the throat as a site for the exudation, to the exclusion of any other mucous surface or any inviting abrasion? Or why should bronchitis accompany measles, and why should the rash begin on the forehead, spreading downward, while in scarlet fever there are present more or less severe throat complications, and the rash begins on the neck and chest, following an upward and downward course? Or why other constitutional fevers, notably typhoid, should have special lesions?

So far as these questions are answerable, these phenomena can only be constitutional fevers with preferred local lesions, explicable by analogy of laws. They are governed, indeed, by some force, the motive or cause of which can not as yet be ascertained.

Not to weary you longer, as our papers have a time-limit, let me give a summary of my conclusions, some of which I have already anticipated:

(1.) Pneumonia is a disease which has the history and course of a definite, self-limited fever, and in its progress, like a true essential fever, causes extensive changes throughout the body, wholly independent of extraneous means.

(2.) The prostration is as marked as typhus fever, and is entirely out of proportion to the lung-tissue involved. The danger to life is due more to the severity of the fever than to the area of crippled lung-tissue.

(3.) The character of the epidemic influences gives tone to the prognosis in a marked degree, and,

(4.) The general laws of selection are demonstrable.

(5.) The therapeutical measures best adapted are those which combat constitutional fevers.

(6.) The heart is more of a guide than the lungs, making it pre-eminently an essential fever.

With these indisputable facts before us, we must conclude that we have in acute lobar pneumonia an essential fever, as surely as in a typhus or typhoid.

QUESTION II.

WHAT FACTS AND RATIONAL GROUNDS, WITH OUR PRESENT KNOWLEDGE, CAN BE CITED IN SUPPORT OF THE DOCTRINE THAT ACUTE LOBAR PNEUMONIA DEPENDS ON THE PRESENCE OF A SPECIFIC MICRO-ORGANISM?

DISCUSSED BY

E. G. JANEWAY, M. D., of New York County.

THE attention of the profession was first particularly called to the presence of micro-organisms in pneumonia by Klebs,¹ who unfortunately sought for their presence in the bronchial mucus of the inflamed lobe instead of in the exudation in the air-cells. The plates prepared by him lead to the inference that he saw the organism now denominated the pneumococcus. But his cultivations were rendered impure by the non-observance of the rules now adopted in the prosecution of bacteriological studies. Hence his experiments upon rabbits lose much of their value. In his investigations, which he put on record in 1875, he designated the bodies as monodines, giving the round form a size 0.8 mm., and referred to the occasional union of chains of from 2 to 6, ascribing to them motor properties. He also drew attention to their presence in the ventricular fluid of the brain. Von Recklinghausen, in 1876, seems to have been the first to point out their presence in the tissues in an article published in Wurzburg.

In 1880 Eberth published an article under the title, "Toward the Knowledge of the Mycotic Processes."² The first of

¹ "Archives for Experimental Pathology and Pharmacology."

² "Deutsches Archiv für klinische Medicin," vol. xxviii.

his cases is one showing a combination of pneumonia and meningitis. He promulgates his views concerning the facts with reference to the lungs. Diplococci occur in the partially fibrinous exudation of the portion of lung affected with gray hepatization, though they are not so numerous as in the subarachnoid fluid. They were very abundant in the fibrino-purulent coating on the pleura, and in the pleura itself, manifesting themselves partly as single diplococci and partly as colonies. The latter form flat heaps consisting of one or at most two or three layers. He then distinguishes between these organisms and those supposed to produce diphtheria and pyæmia. The organisms found in the lung, in the pleura, and in the pia he maintains to be forms different from the ordinary diphtheria and pyæmic micrococci. He then institutes a parallel between the organisms which he had seen in this and those to which Klebs had previously drawn attention. Eberth's¹ article is accompanied by a plate showing the appearance of the organisms in question, as they exist in the pleura and the pia. They seem in fact to be identical with pneumococci.

Robert Koch, in an article dated May 10, 1881, upon the research of pathogenic organisms, makes brief mention of the microscopic appearances in a case of pneumonia following relapsing fever. The following is his statement of the condition: "The distribution of the bacteria in this case corresponds to that in erysipelas. The bacteria were only found in the alveoli situated at the border of the consolidated portions of lung. They were most apparent in such alveoli as were only partially filled by the exudation. In the neighboring alveoli, completely airless, the bacteria were yet visible, but not so well colored and apparently in a dying condition; they, like the erysipelas micrococci, encompassed by a narrow border the diseased portion of lung and partially occupied a space immediately adjacent thereto. In some places the penetration of the bacteria into single lung-capillaries could be traced. They were also shown to be present in the kidneys within some of the capillaries.

¹ "Mittheilungen aus dem kaiserlichen Gesundheitsamte," Berlin, 1881. Dr. Struck, editor.

These bacteria in the lung-alveoli could not have been recognized without the use of nuclear coloring methods and the employment of an Abbé condenser." He then inquires whether many pneumonias would prove to be of bacterial origin if these were examined by this method, and in the same portion of the border zone of the inflammation.

The article, by means of photographs, shows the bacteria to be mono-diplococci, disposed in short chains, round or somewhat elliptical.

Dr. C. Friedlander,¹ referring to these articles, states that from September, 1881, he had examined all the cases of acute pneumonia for micro-organisms, and always with a positive result. These were eight in number. The micro-organisms found were nearly always of like form and size. They were cocci of ellipsoidal form, in length almost a micro-millimetre, and in breadth somewhat about a third less. The circular form under which they also appeared he considered to be ellipsoids seen in the direction of the long axis; circular forms, however, were also sometimes demonstrable. These were mostly united in couplets (diplococci), forming longer chains in which often the component parts of diplococci could be recognized. He then describes their presence in the fibrinous exudation in the bronchi, and points out the manner of their appearance. In the alveolar infiltrates, they were found for the most part within the fibrinous mass between the round cells and the red blood-globules. The number of the micrococci was here astonishing, for in a single alveolus in the grayish-red hepatization there swarmed many hundreds, nay, often thousands. They were far more sparse in the gray and grayish-yellow hepatization, but were here also uniformly found. He discovered them in no case of croupous pneumonia within the cells. He missed them in the most of the cases in the alveolar walls, in the walls of the bronchi, and in the vessels as well as in the neighborhood of these parts. They were present in one case in greatest amount in the lymph passages of the interstitial connective tissue, between the boundary of the hepatized district and the air-holding lung paren-

¹ "Virchow's Archiv" of February 4, 1882.

chyma. They were seen in numbers within the lymphatic vessels, and in some instances they constituted a full injection. While this latter condition of affairs was found in only one instance, the proof of the micro-organisms in the tissue of the inflamed pleura was present in most cases. They were most numerous in the cases where older adhesions existed; here the micrococci lay close alongside of one another in the slightly cedematous tissue of the false membrane.

As regards the importance of his examinations he writes: "I am obliged to lay especial value upon the fact of the filling of the lymph paths of the connective tissue with micro-organisms. The micrococci in the fibrinous mass within the bronchi could perhaps have arisen subsequently in the dead substance of the fibrin, and hence be of little importance. A similar view is not tenable for the alveolar exudation, according to my opinion. The lymph-vessel fact, however, furnishes the undoubted proof that the micrococci arrive in the juice stream and grow in the living tissue. The fact of the growth in the pleura and pleural adhesions is of the same force as that of the lymphatics."

A little later a capsule was described as peculiar to this coccus. This happened first at a meeting of the Vereins für innere Medicin, Berlin (November 20, 1882). Herr Gunther presented a drawing of the pneumococci, which he had obtained by an exploratory puncture. Around these he had delineated a capsule. At this same meeting Professor Leyden spoke of a case from which, during life, he had been able to obtain only a little fluid, the needle having punctured the lung, in which a post-mortem examination proved a pneumonia to be present. This fluid contained the mono-diplococci and chains of a kind like those described previously. Professor Leyden was convinced that the fluid came from the lung by the microscopic appearances. In the case previously mentioned by Gunther, an autopsy by Friedlander showed adhesion between the inflamed lung and the pleura costalis. Friedlander, moreover, found the same kind of cocci in sections of the lung. As a proper interpretation of these facts he assumed that the micro-organisms existed during life. A little later these micro-organisms were cultivated,

and experiments were instituted for the purpose of producing pneumonia (1) from the cultures, (2) from the fluid withdrawn from the chest during life, and (3) from the post-mortem portions of hepatised lung.

Friedlander,¹ later, reported that he had examined fifty cases of pneumonia, and found the cocci absent in only a few instances—to wit, in those from the ninth to the thirteenth day. In this article he laid still greater stress on the capsule, though he admits that it was not always present, and that it was especially missed in the cases older than the ninth day. He was fortunate also in his cultures from two of these cases, the respective forms being somewhat nail-like and peculiar. The culture in question appears in the room temperature as a bead, somewhat above the level of the gelatine, and finally amplifying to a hemispherical dull white, pearl-like elevation. The line of injection in the gelatine was surrounded by a slight clouding, and about this later a number of little white grains formed, the largest being not more than three mm.

The attempt has also been made to prove the specific nature of the pneumococci by their introduction into animals. Friedlander, as I have stated, succeeded in obtaining a pure culture from the two cases of pneumonia just mentioned, and used several recultures from this source with the following results:

Rabbits negative.

Mice, of thirty-two almost all died in eighteen to twenty-eight hours. From these he again obtained a pure culture.

Guinea-pigs, three out of eleven died; three others were sick and were killed; the remainder yielded nothing of scientific value.

Dogs, four of the five were slightly sick, and the one died in forty hours of pure pneumonia.

He also performed inhalation experiments with the culture material.

In Guinea-pigs, negative. The mice died as before, with the same anatomical results.

Professor Salvioli used seven rabbits and six rats, on which

¹ "Fortschritte der Medicin," No. 22.

he claims to have produced pneumonia and also fibrinous pleurisy by injection into the pleura. He states that he injected the same fluid, without cocci, with no result. These experiments were made with pathogenic fluids, ranging from the second to the sixth reculture.

Previously and afterward attempts were made to use pneumonic sputum, but in dogs and rabbits septicæmia thus far has been the only reward. The experimenters were Guffini and Cambria, in Italy, and Mendelson, of this city, then working in Germany; Kuhn, also, who used the sputum diluted.

Talamon, in France, claims to have produced pneumonia by inoculating with blood from a patient. He operated on twenty rabbits, two Guinea-pigs, and four dogs. He described the coccus as having been cultivated in bouillon of Liebig; that it had grown in size to three or four mm. long and one half to two mm. broad; that it was lanceolated in shape, and, when introduced into the tissue of the lung, would produce pneumonia, with pleurisy, and frequently also pericarditis. Taking into account the size of the organism used, it may be questioned whether it was really the pneumococcus. Still, I admit that his errors of measurement might have been due to the coalescing of several individual forms into one. He had negative results with dogs and Guinea-pigs, but, out of twenty rabbits, in eight he succeeded in originating fibrinous pneumonia, with pleurisy and pericarditis.

Again, Cornil presented to the Biological Society of Paris the outcome of work done in his laboratory by Afausieu. He took his medium for obtaining culture from the lungs of pneumonic patients by the hypodermic syringe. He found three varieties of cocci, of which two were inoperative, but the third, or ovoid, generated a pneumonia. His conclusions were:

1. The microbes take an active part in the production of fibrinous pneumonia.

2. Several micrococci are found in the exudation of hepatised lungs.

3. The pathogenic properties of these micro-organisms are feebly operative unless they reach a soil prepared for them by a previous debilitation.

4. The direct introduction of the microbe into the lung is the more dangerous method of inoculation.

Dr. George Miller Sternberg, U. S. A.,¹ claims the right to denominate the pneumococcus of Friedlander the micrococcus Pasteuri, because this latter was first described as having shown itself in the saliva of a child supposed to have died of hydrophobia, and as having produced fatal septicæmia in rabbits by inoculation. He maintains that both are identical in having an oval micrococcus widely distributed, that the forms observed were persistently present in his own mouth, and that with these micro-organisms he can produce in rabbits a fatal septicæmia, marked by the presence of these organisms in the blood in great numbers.

He points out the resemblance of the two forms as being considerable, and thinks that they are identical. He gives the size of the mouth-coccus as Talamon does, which, as I have already shown, is larger than that of the pneumococcus, unless, indeed, the variation in measurement is explained in the way I have mentioned. He does not give the result of continued parallel-culture.

So also Passet, in the course of his researches upon the "etiology of the purulent phlegmon of the human race," describes a microbe as being a pneumonia-like micro-organism. This he met twice in thirty-three examinations of abscesses, etc. He found the following differences in culture: The pus-coccus does not develop along the line of inoculation within the gelatine, but is a pure aërobe. After three or four weeks there appears in both a brownish color at the upper part of the gelatine. The pus-culture becomes mostly pulpy, and develops a slightly foul odor. He thinks that, microscopically, there are certain differences, inasmuch as there are more long forms in the pneumonia-coccus and more round ones in the pus-coccus. The round form of each is 0.87 mm., and of the long 1.16 mm. He describes a slight difference, also, in plate-culture, while upon potatoes he finds that the micrococcus of pneumonia develops more or less gas development and bubbles, which does not happen with the pus-coccus.

¹ "American Journal of American Sciences" for July, 1885.

This latter organism possesses a capsule under like conditions as the pneumonia-coccus, viz. : in the cultures from blood-serum, potatoes at body temperature, and from the body, but he does not consider it so striking in the former as in the latter. These cocci from pus injected into the pleura, peritonæum, or subcutaneously in large quantity, produced death quickly, without microscopic alterations, or with irritation of the tissues upon which they were applied. There was often, also, transudation into the pleura and peritonæum. These cocci also, could, in case they were injected under the skin without producing death, lead to abscess; usually, however, this came from the potato rather than from the gelatine culture. These pus-cocci, he says, never produced pneumonia.

From the preceding investigations in Germany and France it has been shown that in pneumonia there exists a peculiar organism present in the sputum, the bronchial contents, and the lung tissue involved in the disease. What is true for Europe is also true for this country, as many observers have shown. I have rarely missed it in examinations of inflamed lungs, and have found it as described; so also Dr. Prudden has testified in the work on "Pathological Anatomy," edited by Dr. Delafield and himself.

I had hoped to perform a number of experiments by which I could satisfy myself as to the nature of the pneumonia excited, but my own illness with the disease prevented my working up this part of the subject. Three days ago I injected three rabbits with an old pneumonia culture. Two still live, one has died. I attempted to obtain cultures from the lungs of two patients, by withdrawing fluid by the hypodermic syringe, but though in both pneumococci were present in the sputum, in one no result was obtained, in the other only a bacillus grew, probably owing to some impurity. The dead rabbit exhibited bloody serum in his pleural cavities, the right lung—the site of the pneumonia being consolidated for two thirds of its length—had collapsed. There was a fibrinous exudation on the right pleura and also another of like nature in the pericardium. The blood, the fluid from the pleura, and the inflamed lung all show

mono-diplococci, etc., as described above. There was in this case a death from septicæmia and pneumonia. In the lung, in addition to the cocci, there were a few bacilli present. The injection in this case was made into the right pleural cavity and very likely into the lung.

From the facts which I have presented, a strong case may be made out in favor of the pneumococcus as a cause of pneumonia. The capsule, the brown color of old cultures, the nail-like growth in cultures generally, do not seem to be absolute proofs of the organism. If this organism be the cause of pneumonia, it operates by gaining its entrance from without into the mouth and respiratory tract, and there growing establishes the disease. It would be extremely improbable to suppose that it penetrated into the system first and then became localized in the lung.

Those who witness the results of such experiments as I am about to show to-night have a right to object to the mixture of septicæmia early in the disease as not giving a fair parallel with what obtains in human beings. This germ is specific, in not only establishing inflammation of the lung, but when growing in the lung produces that condition.

The other rational grounds in favor of an organism are the cyclical course of the disease, the occurrence of groups of cases under conditions pointing toward their origination from the same cause acting in the locality, or from an individual previously ill with the disease. Cases of this nature are sufficiently numerous to need no more than a mention, and would occur to those arguing in favor of the infectious nature of the disease.

QUESTION III.

WHAT CONDITIONS OR CIRCUMSTANCES INCIDENT TO ACUTE LOBAR PNEUMONIA TEND TO RENDER THE DISEASE FATAL?

DISCUSSED BY

W. H. ROBB, M. D., of Montgomery County, and
H. M. BIGGS, M. D., of New York County.

DR. W. H. ROBB.

THE danger to life in pneumonia is so modified by the age, sex, and race of the patient, the extent of lung tissue involved, the previous health, and the various complications that may accompany it, that one is obliged to judge of the gravity of each individual case separately. The average mortality in pneumonia, as determined by the comparison of various statistical reports, may be stated as being one in five, or twenty per cent. The very young and the very old are more likely to succumb to this disease than those in middle life. In infants the disease is most fatal during dentition. Out of ninety-four cases Steffer lost thirteen, nine of them being under three years of age.

After the age of thirty the mortality from this disease increases with the patient's increase of years. A single table from Huss clearly demonstrates this fact :

Age.	No. of Cases.	No. of Deaths.	Percentage.
5-10	9	1	11·11
10-20	229	14	6·11
20-30	1041	61	5·85
30-40	816	97	11·88
40-50	363	72	19·83
50-60	127	27	21·60
60-70	29	7	24·13
70-80	4	2	50·00

Other authors support the accuracy of this table. Dr. Flint says: "In aged and feeble persons it may end fatally without any co-existing disease, especially if more than a single lobe be involved." Dr. Loomis considers this disease very fatal after the patient has reached the age of sixty. He adds: "My own experience leads me to believe that it is the most fatal of all acute diseases at this period of life." Dr. Wood states that "in very advanced age it is extremely dangerous," and to this I may add the statement that in colored people the disease is more fatal than in the white. During the late war, from May 1, 1861, to July, 1866, among the white troops, 61,202 cases of pneumonia occurred, with 14,798 deaths, or a mortality of twenty-four per cent. For the same period, among the colored troops, 16,133 cases of pneumonia occurred, with 5,233 deaths, or a mortality of thirty-three per cent.

As regards sex, the mortality is greater in the female than in the male; the returns from Vienna give the ratio as three of the former to two of the latter, and Huss, whom I have before quoted, gives the mortality as fourteen per cent. in females to ten per cent. in males.

Pregnant women are also in greater danger than the non-pregnant. Out of eighteen cases belonging to the former class, reported by Grissolo, eight proved fatal. In the puerperal state pneumonia is very fatal.

Each additional lobe of lung involved in the disease adds to its gravity. In one hundred and thirty-three cases analyzed by Dr. Flint, two proved fatal in which the disease was limited to but one lobe and uncomplicated; but when the upper lobe is involved more victims are counted than when the disease is limited to a lower lobe.

Recovery is very doubtful when the whole of either lung is affected, and in double pneumonia it is the exception. Debility, as the result of over work, dissipation, or disease, is apt to increase the mortality rate. When developed in chronic drunkards, Wilson Fox states that the mortality is nearly doubled. According to Dr. Flint, the most dangerous complications are "pericarditis, intermittent fever, and delirium tremens." Of

the last, most of us in active practice have seen many lamentable verifications.

Dr. Loomis reports two hundred and fifty-five cases of pneumonia, with eighty-seven deaths. One hundred and twenty-four of these were complicated and one hundred and thirty-one uncomplicated. Seventy-five of the complicated and twelve of the uncomplicated cases died.

Wilson Fox gives the following as the ratio of mortality in cases of pneumonia: Complicated by endocarditis, 75 per cent.; pericarditis, 54.5 per cent.; Bright's disease, 50 per cent.; old valvular disease of the heart, 30 per cent.; tubercle, 33.3 per cent.; emphysema of the lung, 23 per cent.; chlorosis, 20 per cent.; chronic alcoholism, 25 per cent.; and drunkenness, 20 per cent.

The mortality is increased when developed during the course of measles, scarlet fever, and other acute diseases; also, during epidemic years, the mortuary tables swell up the number in the pneumonia column. As may be supposed, the mortality is greatly increased by the development of gangrene or abscess of the lung; of the former, I have noted as remarkable, one case of my own which recovered after the occurrence of gangrene.

When the pulse rate reaches and is maintained for any considerable length of time at 130 or 140 per minute, it may be deemed to be the precursor of death. An irregular or intermittent pulse is even a more dangerous symptom.

A persistent temperature of 105° , if continued for any length of time, is one of the most serious symptoms; when a rate of one degree higher has been attained, recovery, according to my own experience, has proved impossible.

Little prognostic value can be attached to the character of the expectoration, which last, in a limited number of cases, is entirely absent. The prune-juice sputa may be considered to indicate the gravity of the disease; the same may be said of the muco-purulent or purulent expectoration, and in a more definite degree when foetid, as denoting the presence of gangrene.

Very frequent, labored, and irregular respiration, particularly when accompanied by lividity of the surface, almost always

ends in a fatal issue. Active delirium, always a dangerous symptom, when continued, quickly exhausts the patient. Delirium, of the "low, muttering" variety, together with subsultus tendinum, coma-vigil, and quick, irregular, feeble pulse, cold extremities, clammy skin, great pallor, extreme emaciation, pinched, drawn features and tracheal râles, all proclaim the patient's inevitable doom.

Convulsions are particularly dangerous, and if repeated during the course of the disease often prove fatal.

DR. H. M. BIGGS.

It is generally admitted by the recent medical writers that simple acute lobar pneumonia has an inherent tendency to self-limitation, and that the large majority of uncomplicated cases, in early or middle life, tend toward ultimate recovery. When this result does not follow, it may be usually found that the fatal issue is to be largely ascribed to some other circumstance or event incident to the disease. Mortuary statistics, because of the lack of uniformity in the classification, are here especially untrustworthy, for writers, as a rule, fail to distinguish the simple cases occurring in healthy persons, during early or middle life, from the complicated cases and those appearing in old or enfeebled subjects. In the former class the mortality is quite low. In about six hundred uncomplicated cases collected by myself, as reported by different writers, the average mortality was a little over six per cent. In the complicated cases, on the other hand, the mortality is often very high; but, depending as it does on the nature of the complication, it varies within wide limits.

The general circumstances or conditions which tend to render this disease fatal may be brought under the following heads:

1. The existence of some unfavorable conditions as regards habits, constitution, surroundings, sex, age, etc.
2. The appearance of the disease as a complication of some other acute or chronic affection, or after surgical operations.
3. The development of some complication in its course, or

the conclusion of the process in an abscess, in gangrene, or in purulent infiltration.

4. The extent of the lung tissue involved.

5. The intensity of the action of the morbid principle.

In taking up the discussion of the first head, namely, unfavorable conditions as regards habits, constitution, age, etc., we come at once to deal with some of the most important factors which tend to render the disease fatal.

Probably to no other condition or complication is so large a number of deaths to be attributed as to the occurrence of lobar pneumonia in individuals addicted to the habitual consumption of alcoholic stimulants in large quantities. In city hospital practice a very large proportion of all the deaths resulting from this disease occurs in persons of this class, and nearly fifty per cent. of these cases prove *rapidly* fatal. The mortality is even higher in those instances where the pneumonia occurs during or immediately after a prolonged debauch; still more decidedly is the danger to be emphasized when old age and chronic alcoholism are in partnership.

During young and middle life pneumonia rarely proves fatal; but from fifty years of age upward the mortality increases in a constant ratio, until one half of the cases occurring among the very aged are not expected to recover.

Sex also has some influence as regards the prognosis. In the analysis of a large number of cases by Juergensen, it was found that the percentage of deaths was considerably higher in females than in males, and, where the disease occurred in connection with pregnancy, the ratio of mortality was still further increased.

As regards surroundings: One fact that has impressed itself very forcibly upon me is the exceedingly deleterious influence on the course of the disease produced by physical exertion or mental excitement. It is not very unusual in the cases of strong and previously healthy men who have come into the hospital in excellent condition, that on the third or fourth day of the disease, after consolidation has taken place, death results from heart failure within forty-eight hours after their admission. I be-

lieve that here the death is due to the extraneous commotion and personal effort incident to removal. I do not think that I overstate it when I say that recovery might have taken place even had there been little else than rest in bed during this critical period.

Under the head of constitutional predisposition to the disease those cases are classed which occur in persons possessing inherited weak constitutions, and especially those in whom there is a tendency toward the development of tuberculosis. These persons show a somewhat greater susceptibility to the development of acute lobar pneumonia, and in them the disease, when it has once appeared, shows a greater tendency either to eventuate in some chronic process or to terminate fatally.

I turn now to the consideration of the second class, namely, those cases in which pneumonia occurs as a complication of some other acute or chronic affection, or after surgical operations. The development of lobar pneumonia in the course of many acute diseases, such as the acute exanthemata, and various septic processes, is of comparatively frequent occurrence, and often of very serious import. There is scarcely a medical or surgical infection, or septic disease, in which we do not meet with pneumonia more or less as a complication, and there is no other disease which appears so often as a complication under such varied conditions that is to be so much feared as this. It is often the immediate cause of death in many chronic diseases, such as various affections of the spinal cord, chronic Bright's disease, valvular disease of the heart, and degenerations of the muscular substance of the heart. It has been my fortune to see lobar pneumonia manifest itself after even comparatively slight surgical operations, and in each case produce death.

The third class of cases, those in which some complication appears in the course of the disease, or in which some morbid process ends in an abscess, in gangrene, or in purulent infiltration, contributes in no small degree to the aggregate fatality. The occurrence of delirium tremens in the course of pneumonia is, as you know, quite frequently observed; when it appears during or soon after a debauch, its development is secondary,

and its termination is, as a rule, in a speedy death. In a large proportion of the severe cases of pneumonia, the urine is more or less albuminous, and often contains blood. In a small number of this class the affection of the kidneys is disastrous, and acute parenchymatous nephritis develops as a serious complication. All cases of lobar pneumonia are associated with more or less dry pleurisy, which has little significance, but sometimes it is accompanied with considerable effusion. But, if this effusion is large in amount and purulent in character, it adds very greatly to the gravity of the prognosis. Endocarditis, pericarditis, and meningitis are also occasional complications of pneumonia, and all of these, especially the last—meningitis—greatly increase the ratio of mortality. Then again, pneumonia may terminate in abscess, gangrene, purulent infiltration, and fibroid phthisis. The termination in abscess is rare, the proportion of cases in which it follows this disease being not more than one per cent. Gangrene is of rather more frequent occurrence, but this is also a quite unusual termination, while purulent infiltration not infrequently replaces the third stage of pneumonia, and especially in debilitated subjects. These conditions render the prognosis exceedingly grave, and, as a rule, determine a fatal issue.

The fourth class of cases, namely, those in which more than a single lobe is involved, constitute a rather large proportion of all the cases, still not infrequently two or more lobes are affected. If more than two lobes are involved, the termination is almost always in death, and, even when only two lobes are affected in otherwise uncomplicated cases of the disease, the mortality is still high.

I come now to the consideration of the fifth head—i. e., the intensity of the action of the morbid principle. Pneumonia, in common with all infectious diseases, is in certain epidemics unusually severe. Thus, in an epidemic of this disease which occurred in the north of England some time since, the disease seemed to assume a very malignant and a distinctly contagious character. Each case could be traced back to personal exposure or contact with some preceding case, and the ratio of mortality was exceedingly high. It has been often noted that in certain

seasons or in certain years the disease is unusually fatal; and again, in some individual cases, from its first onset it exhibits a peculiar malignancy. Accepting the doctrine of a specific cause in the nature of a micro-organism, we can explain more or less satisfactorily these observations. In regard to some pathogenic germs it has been repeatedly shown that their cultivation under peculiar conditions, or their subjection to the action of certain reagents, increases or diminishes their virulent power. May not some as yet undetermined atmospheric or telluric condition so increase this virulent power of the germ as to render an epidemic possible, and also account for the high ratio of mortality? In answering my query, it is not necessary to eliminate the individual cases of marked malignancy, which may be readily explained on the ground of different degrees of natural susceptibility to the action of the micro-organism. Even further, the influence of certain predisposing causes may render the individual himself, for the time being, less receptive of or less resistant to its action or development.

Is it possible now to trace any common factor in all these conditions and influences tending to render pneumonia fatal, any similarity in the action of the various complications? It seems to me that we can. The immediate cause of death in the large majority of the cases of pneumonia I assert to be heart failure. It is true that collateral cedema of the lungs has been the alleged immediate cause of death in many cases; but usually, if not invariably, this is not primary but is secondary to heart failure.

Now I am led to say, what will be often repeated in this discussion, that pneumonia is an essential fever, with its chief local manifestations in the lungs. It does not occur primarily as the result of great physical exposure, as once our fathers supposed, and is not to be classed with inflammatory diseases; but, on the contrary, it is an infectious disease in the same sense that typhoid fever is, and is due to a specific cause. From the nature of this cause, and its relations to the human organism, the course of the disease, in uncomplicated cases, is quickly self-limited, and in most of the fatal cases the result is owing, not to the direct

action of the specific cause, nor to the effects of any genetic poison, but to the conditions or influences (largely mechanical in their nature) arising from the development of the micro-organism and the lesions thereupon produced. Death ensues because the living organisms, which produce the disease, bring about certain changes in the pulmonary tissues. Additional work in a compensatory way is, therefore, thrown upon the right heart, overworked and enfeebled as it is by the effects of the high temperature. Let the heart be organically diseased, with its increased demand for muscular power, and how can syncope or pulmonary œdema be averted? A strong, unembarrassed heart is, to say the least, one of the contributing essentials of recovery. In a few cases there are other influences incident to the disease itself, which, acting through the agency of the nervous system, assume large proportions in producing the fatal result. These influences probably have more or less effect in all cases, but in the majority of instances it is comparatively slight. What their exact nature is we can not now be told, but that they are directly or indirectly the result of the action of a living cause is certainly altogether probable. Perhaps this action is due to the production of a vegetable poison in the course of the microbic development. In some few cases these organisms apparently play a prominent part in producing the fatal result, but that death, when it does occur, is not usually chargeable to them is shown by the low mortality in simple uncomplicated cases as well as by the constantly increasing ratio of the mortality as we advance along the line of the complications. In these last, the depressed cardiac action leads all the other lethal elements. In corroboration of the infectious nature of the disease, I may refer to those cases of lobar pneumonia in which the constitutional symptoms are entirely out of proportion to the extent of lung tissue involved. These are the cases in which from the beginning the system seems to be overwhelmed by the morbid agent, the death sometimes occurring so rapidly and with such profound symptoms of depression as to be absolutely startling. The post-mortem lesions, at the same time, are so limited that we hesitate to ascribe the death alone to this cause.

It has been stated by several observers, Leyden and Klebs chief among the number, that, in cases where meningitis has occurred as a complication of pneumonia, the pneumococcus has been found in the meningeal exudation. If this be true, and there seems to be no reason to doubt the accuracy of these observations, it is certainly fair to conclude that the meningitis is the result of the direct action of the micrococci; and it seems not improbable that, in the cases where death showing slight local lesions rapidly occurs, the minute organisms, having found their way in some manner, perhaps by the lymphatics, into the general circulation, have thus accomplished their work.

To sum up; then, I believe pneumonia to be an infectious disease due to a micro-organism, whose virulent power in man is so great as to ordinarily produce death; that the majority of fatal cases are those in which some other influences or conditions weaken the heart-power to that extent that the increased demands made as a resultant of the pulmonary lesions exceed the limit of the heart's muscular strength; that the second class of cases, small in number, is composed of those in which the virulent power of the germ is greatly intensified, and death is brought about by the profound constitutional depression caused by the action of the specific micro-organism.

From this stand-point, any influences or conditions which, directly or indirectly, tend to diminish the heart's power, in exactly the same proportion tend to render the disease fatal. These questions are of the greatest importance as regards treatment, and should, therefore, be kept steadily in view. But the therapeutics of the question do not come within the scope of my paper.

QUESTION IV.

ARE THERE KNOWN REMEDIES OR THERAPEUTIC MEASURES
CAPABLE OF ARRESTING THIS DISEASE, OR OF EX-
ERTING A CURATIVE INFLUENCE BY EITHER
SHORTENING ITS DURATION OR CON-
DUCING IN ANY WAY TO A FA-
VORABLE TERMINATION?

DISCUSSED BY

THOMAS F. ROCHESTER, M. D., of Erie County, and
ELY VAN DE WARKER, M. D., of Onondaga County.

DR. T. F. ROCHESTER.

WITHOUT dwelling upon the fatality of pneumonia, or its prevalence during the past few years, or my own opportunities of observation during a long period spent in the active duties of my profession, I can not but feel that the task imposed by you might have been assigned to others with much more of profit. I shall content myself, without indulging in minute details, with merely mentioning procedures as I myself have known them to be employed. If I am lame in my conclusions, yours must be the penalty of my failure. Many remedies have had their day in this disease, and not a single one has risen to the dignity of a specific. As Dr. Alonzo Clark was accustomed to say, "You may recognize the intractability of a disease by the long list of recommended remedies." Many have been the theories of cure, plausible enough on the face, but not wearing well on acquaintance. The lancet, used freely and often, say two or three times in as many days; a calomel purge, followed by a saline aperient and tartar emetic in small doses; opium and nitrate of potash, frequently administered, constituted the routine practice of my early days. A departure from this course was looked upon as heretical; and yet, speedy and rapid re-

covery seemed as a rule to follow this method of treatment. But, especially so far as results in the elderly and very aged were concerned, many even in those days began to look askance and lose confidence. Then "the change of type" theory came into vogue—the disease, it was said, was no longer sthenic. It is useless, however, for me to follow changes of opinion or modes of treatment.

Many authorities place much reliance upon the arterial sedatives, veratrum viride, aconite, and digitalis. I can not advocate them, believing as I do that there is great need of a strong, well-sustained cardiac action, to compensate for the diminished lung power. The heart is our only hope, both to prevent pulmonary capillary engorgement and to keep up the general tone of the circulation at large. Remedies like these may be useful as tonics, but should not be made to interfere with nature's proper efforts.

Apyretics are now much used. The *modus operandi* of quinine, which is embraced in this class, is thought to be that of a cerebro-spinal stimulant, causing contraction of the capillaries. Some claim that it likewise acts directly as an antiphlogistic, mainly with reference to the mucous membranes of the air-passages. But its virtues are so kaleidoscopic that you must content yourselves with your own views. Antipyrine is still on trial, but has many eulogists. Now, I fully appreciate the exhaustion and the danger of high temperature, but I think apyresis may be carried too far, to the exclusion of other agents slower but in the end more effective in their work. Indeed, some of my brethren maintain that their use savors too much of mere symptom-treatment.

Many cases of pneumonia will recover without the use of alcohol, but I strongly advocate it when there are indications of heart-failure. It is really miraculous in its workings when thus opportunely administered—the pulse will slow up and be steadier, the temperature will fall, the delirium cease, and the respiration improve. I am not at all disposed to abandon so prompt a stimulant, but would counsel circumspection lest it also be powerful for evil. Small doses of strychnine (gr. $\frac{1}{80}$ to $\frac{1}{40}$), at

brief intervals, I have found useful in sustaining a flagging heart, indirectly through the medium of the nerve centers, and also as an appetizer. Large doses of opium, in common with the general sense of the profession, I condemn, although many of us can remember when the drug now tabooed as thus given was in the highest favor. Five grains of the pulv. ipecac. comp., or the eighth of a grain of the sulph. morphiæ, will be amply sufficient to allay pain and suppress cough. As a safeguard against mischief, I give either of them in doses four hours apart—of the two, morphia has the advantage of a greater acceptability to the stomach. As to the matter of sponging the surface, I would suggest that the water be of the temperature of 98° Fahr., as not in any way unpleasant or objectionable; still in the sick-room we must expect to encounter argument against its use.

What I have just said, perhaps, some of my hearers have already divined as being introductory to the mention of a single medicament, to wit, the carbonate of ammonia. In 1848-'49, while an interne in Bellevue Hospital, New York city, I learned its value from Drs. Alonzo Clark and John T. Metcalfe, the visiting physicians, and have ever since adhered to its use. It is certainly one of our best diffusible stimulants, which by its alkalinity possesses aplastic powers and so prevents embolism. Notwithstanding the custom of some to delay the administration of this agent until the advanced stages of the malady, I do not hesitate to begin its use as soon as I have recognized the disease. Its immediate effect is conceded to be stimulating, and it therefore should be given at frequent intervals. Stillé¹ says that it "modifies the character of the pulmonary secretion, rendering it both less abundant and less viscid." He also refers to its protracted use as being debilitating, but in an acute disease this you will recognize as no objection. Dr. Williams² recommends it in the advanced stages, to promote expectoration, but this, though exceedingly desirable, you will rightly estimate as being a minor

¹ "Therapeutics and Materia Medica," vol. i, p. 675.

² "Cyc. Practice of Medicine," vol. i, p. 297, as quoted by Waring, "Practical Therapeutics," p. 65.

consideration. I usually advise the following plan, of five to ten grains every two hours, in milk as a vehicle. My formula is: *R* Carbonat. ammonii cryst. \mathfrak{z} ij, aquæ puræ \mathfrak{z} iij. Solve. Sig.: \mathfrak{z} j- \mathfrak{z} ij in lact. recent. pro dos. I deem it essential that the salt be strictly crystalline without efflorescence. It may not be out of place for me now to refer to a case, as showing the good effects of my favorite remedy. Several years ago, when summoned in consultation to Caledonia, C. W., I met Dr. M., and found his patient, aged thirty-five, ill one week with pneumonia. The right lung was hepatized throughout, respiration 40, temperature 104° , pulse 130, tongue dry and brown, abdomen distended and tympanitic, with some diarrhœa and delirium. I well remember the good doctor's look of amazement, and exclamation, "Why, it's pneumonia!" when I advised ten grains of my favorite carbonate with two ounces of brandy every two hours. The patient made a complete and rapid recovery.

Now, I do not wish to be misunderstood as advocating the use of this salt to the exclusion of other remedies. Brandy, as being alimentative, and therefore in a sense antipyretic, particularly when the symptoms are typhoid, I think should never go without a trial. Perhaps you say that then "the honors are divided," and that I convict myself of enthusiasm. For the sake of completing my list, I have only to allude to the oil-silk jacket, as being both neat as a cataplasm and convenient for auscultatory purposes.

DR. ELY VAN DE WARKER.

Two distinct therapeutic measures are implied in this question. First, what will arrest the disease? and, secondly, if not arrest it, what then will cure it? In a disease in which the invasion is so abrupt as in acute pneumonia, we may take it for granted that we can not intervene previous to the local lesion. Thus, we have to deal with the products of inflammation, and that in a tissue as favorable to the exosmose of inflammatory products as the cellular tissue of the pelvis. In a malady properly self-limited, and which in a favorable condition of the sys-

tem shows a spontaneous tendency toward arrest, we may very easily confound the effect of a therapeutic agent with an inherent trait of the disease. But we must further bear in mind that the word *arrest* may not express the sequence of events in this state. The inflammatory condition may have measured the intensity of the cause, and ceased when the morbid force was expended, thus constituting a limited cause and a minor degree of morbid product. As a natural sequence, there exists a nearly unimpaired power of inherent resolution or absorption. This is not arrest. It is cure. It comprises the whole limit of the natural history of the disease. In this favorable type of the disease, are there any agents that will aid the forces of spontaneous cure? To this I answer in the affirmative, but by no direct agency, by no law of cure. The agent to which I assign the first rank is rest—total rest. It may be asked, Do we not always prescribe rest for cases of pneumonia? Not always. It is not an unusual thing to find patients sitting up because it is so comfortable, and who are driven to bed by exhaustion, not inclination. The rest, I repeat in other words, must be absolute. The bed-pan and urinal must be in requisition, and the patient not allowed to sit up even to eat. In simple cases, with a fair average of reserve vitality, I do not believe that any other treatment is needed. I can enforce my idea by reversing the statement. If reliance is placed upon drugs, and rest is not enjoined, you are never sure of your patient.

It is not supposed that we shall accord with authority in this debate. Its object, I apprehend, is latitude of expression. I would say, then, in broad terms, that if we were intentionally to employ agents to aid the natural forces that tend toward spontaneous cure, they would operate in keeping the vital forces as near as possible at par. All depressors should, therefore, be avoided. Nauseants, *veratrum viride*, a too active employment of *aconite*, would tend to lower the forces upon which we have to rely.

In answer to the second clause of the question, I shall confine my answer to one agent—the hydrochlorate of ammonium. I would base its employment upon its well-recognized quality to

aid in the resolution of inflammatory products. I reason from its clinical use in pelvic inflammatory effusions. We can not expect that of itself it will curtail the inflammatory process, when its curative action as such resides in its products. Its employment by most physicians is throughout the course of a pneumonitis; they explain its action in the light of a hypothetical stimulant. Some of the ammonia salts, like the carbonate, undoubtedly fulfill this purpose, but in the direction in which this exerts its curative effect I deny this action. Entertaining such a view, then, I should give it at the second stage in small and frequent doses, thereby creating a current, as it were, of hydrochlorates through the vessels. Especially is it valuable when the resolution of the exudate is delayed—when the case shows a chronic tendency. I believe that under these circumstances it is very active in aiding absorption. This is the analogue of its use in pelvic effusions, which always become chronic. The absorption of the exudate in lung tissue is much more rapid, and here the salt will exert its full power as a physiological remedy.

QUESTION V.

IS BLOOD-LETTING EVER INDICATED IN THIS DISEASE, AND,
IF SO, WHAT ARE THE CIRCUMSTANCES INDICATING AND
CONTRADICTING THIS MEASURE OF TREATMENT?

DISCUSSED BY

SIMEON T. CLARK, M. D., of Niagara County, and
CHARLES S. WOOD, M. D., of New York County.

DR. S. T. CLARK.

I WELL remember my preceptor's caution, when leaving for my first course of medical lectures. Said he: "Bleeding has gone out of fashion, and you will be taught in every possible way how to avoid it. Well, that, perhaps, is as it should be, but let no school wrest from you the right of discrimination. He who lacks the judgment when, and the knowledge how, to bleed freely in certain cases of pneumonia and puerperal eclampsia is not qualified to practice medicine. Especially is this the case if he be without the requisite courage." I am not opposed to any theory that may be advanced, believing that all the essential characteristics of true pneumonitis may be developed from a variety of sources, and from very opposite causes, under different circumstances. When from any cause the normal status of an individual has been disturbed, and a pathological condition has been developed in the parenchyma of the lungs, which, for convenience' sake, is called inflammation, we have pneumonia. I also recognize the fact that in this, as well as in most if not all diseases, there are exciting and predisposing causes; and that on the proper demonstration of this medical proposition rests the superstructure of rational therapeutics. There seems to me nothing incongruous in admitting a plurality of causes for pneumonia, as well as for any other inflammatory disorder, and we have just as good warrant for numerous and diverse modes

of treatment. After reading some of our modern authors, the conviction is brought home that the observer of pneumonia, as met in our eleemosynary institutions, is not a safe exemplar for the country practitioner. As conditions differ, so should customs. In medicine, in particular, there should be no cast-iron rules. Hence, varied and very divergent lines of treatment have been popular from time to time in the profession. A great name has given currency to one doctrine and time-honored tradition to another—the liberty of choice being considerably left to the profession. Happy is he who is full of resources, and equal to any emergency. Lawyer-like he may argue for the lancet, the blister, the cold bath, tonics, sedatives, or what not, and will acquit himself before a jury of his peers; but, what he claims for himself let him yield to others. The banishment of the lancet was never altogether quite complete. Every extreme is followed by its corresponding opposite, from the Sangrado bleeding to its almost criminal neglect. Can we be quite sure that the cups, the leech, and the lancet have not been unjustly prohibited, and that they are not entitled to a re-instatement? The reaction in their favor appears to have begun. Some, like the late Dr. Gross, of Philadelphia, have openly advocated venesection, claiming that it should no longer be among the lost arts. I recognize, at least, two conditions of the disease under discussion indicating the necessity of blood-letting, and these are best presented by the history of the following cases:

CASE I.—W. W. H. P., single, age twenty-three years, weight one hundred and eighty pounds, height five feet ten and a half inches, temperament sanguine, complexion florid, previous health uniformly good. After plowing, during a pronounced thaw, until “dripping in perspiration,” without a change of clothing, he jumped into a top-wagon, and after a spirited drive arrived just too late for his train. On his return ride, it being now dark, he was obliged to face the wind, which at this time was blowing a gale, the sleet and frozen rain briskly falling. After proceeding with his companion only about a mile he began to shiver, and so markedly that he found conversation difficult. At the end of the third mile he shook so violently, and was suffering such extreme

pain in his right side and throat, that he surrendered the reins to his companion, who, throwing the lap-robe over his head and face, made all possible speed. On his arrival at the house, it was with great difficulty that he could get from the vehicle to the door, but, once within, his mother soon resorted to the usual pediluvia, sinapisms, bottles of hot water, and woolen blankets. He passed the night—an exceedingly stormy one—bolstered up in bed, almost in an upright position. His chill did not cease before nine o'clock, having lasted over three hours, but of this he had no recollection. His mother said that from half-past nine until midnight he seemed to sleep, although he groaned at every breath, and every groan ended in a little hacking cough. At 1 A. M., the chill having merged into a fever, he began to throw off the clothes and ask for drink. His thirst was satisfied by a ptisan of spearmint and pennyroyal, of which he drank copiously. From this time until daylight the fever seemed constantly to increase, and the servant having returned was dispatched for me. After some delay, mainly due to the heavy, muddy roads, I arrived at 8 A. M., when I found him in a condition so closely approaching death that I was exceedingly alarmed. His face was nearly livid, lips were swollen, and eyes suffused; the alæ of the nose kept rhythm with every respiration, the nails were purple, and, to crown all, the radial pulse was almost imperceptible. Nor should I forget to mention that the breathing was bronchial, and the vesicular murmur well-nigh wanting. Need I say that after twelve ounces of blood had been abstracted his muttering moans were heard no more? “Oh, that feels better—my pain in the side is all gone!” he exclaimed, as he recognized me with a sigh of relief. He soon vomited the fluids which he had taken, and thus demonstrated the fact that the stomach had failed to dispose of its contents. Sixteen ounces of blood were allowed as the limit of the venesection.

It is unnecessary to follow the details of this case further than to say that a moderate pneumonia was developed on the right side, with the usual amount of rusty sputa, an average temperature of 103.5° , ending in the establishment of convalescence on the eighth day, dating from the chill. He made a perfect recovery. The subsequent treatment consisted of expectorants, diluents, and local poultices.

Here it may be urged that the blood-letting did not prevent the pneumonia. This I willingly admit, but at the same time claim that, but for the blood-letting, the patient would never have lived to develop an inflammation.

CASE II.—Mrs. J. B., aged sixty, large and muscular, accustomed to rigorous manual labor, while rowing a boat on Sawyer's Creek, on the morning of the 5th of April, 1875, lost her balance and fell overboard. She was in the water only a few moments, and dry clothing was quickly procured, but the same evening she had a slight chill followed by marked febrile symptoms. On the fourth day Dr. B., her attendant, pronounced her case a mild pneumonia of the lower lobe of the right lung. For ten days her condition was not much changed, cough troublesome, sputa dark and abundant; she was able to eat a little at each meal-time, slept at intervals, and was not considered in particular peril.

On the evening of the fifteenth day of her illness, Dr. B. was startled on entering her room to find her in great apparent distress for breath, her eyes protruding, pupils contracted to a point, lips and extremities of a cyanotic appearance, skin flabby, and bathed in a profuse, cold perspiration. He learned that she had been gradually growing worse since morning, having at that time without assistance slipped from the bed to a commode, and in an exhausted condition slowly crawled back to her couch.

About 9 P. M. I saw the case in consultation, and found the cardiac and respiratory muscles almost ready to give up. In this case, as in many others, the great labor had fallen on the right ventricle, and a passive congestion was present in the pulmonary circulation. The blood was slowly but surely engorging the veins and capillaries, in consequence of the obstruction to the outflow from the imperfectly emptied heart. Dr. B. informed me that he had been giving stimulants freely since his arrival, two hours before, but without benefit, and that the antecedent treatment had been mainly negative, so far as active medication was concerned. Convinced that a small quantity of blood rapidly taken would immediately lessen the amount of work to be done by the well-near exhausted heart, I abstracted less than eight ounces, which caused the organ to respond instantly to the alcohol that before had been ineffectual.

These two cases present to my mind the indications for the judicious resort to venesection. The intercurrent and complicating pneumonia of typhus, enteric, and rheumatic fevers; of rubeola, pertussis, erysipelas, and mania a potu; more rarely of phthisis pulmonalis, diabetes mellitus, and valvular disease of the heart, do not call for the use of the lancet as a remedial measure. This I state as a rule. There is one condition, however, in the course of pulmonary consumption in which blood-letting has proved, in my hands, a most prompt and marked measure of relief. I have often observed that in such patients as suffer from slight but repeated attacks of hæmoptysis, the destructive process is less rapid than in those who never bleed from the lungs. When I meet with a condition of active congestion, simulating the complete stasis described in Case I, marked by acute pain in the side, I use the wet cups, for the immediate relief of the pain, and I verily believe that I sometimes arrest the progress of the disorder.

DR. C. S. WOOD.

Is blood-letting ever indicated in acute lobar pneumonia? Recent authorities say "almost never." Experience says, yes, frequently. The learned propounder of these eight questions admits that it is admissible in certain cases as a palliative, and perhaps to some extent as a curative measure, by reason of the promptness of its action. But I do not propose quoting authors, as their varied views and opinions are well known to all. It is generally admitted, at the present day, that the frequency of venesection, as formerly practiced, is neither called for nor justified, since we now are dealing rather with a specific or local disease than with the effect of such disease as manifested by the general constitutional disturbance.

By far the greater number of cases of pneumonia are found to occur in persons of unsound constitutions, with a vitality lowered by a great variety of causes—e. g., the abuse of alcohol, chronic organic changes, malaria in its protean manifestations, poor food, unhealthy surroundings, overtaxation of either mind or body, or overbathing, etc. In this class, which forms so

large a part of our patients in towns and cities, the abstraction of blood, except perhaps locally, is not to be considered, and is not by the intelligent physician practiced. But a minority, particularly in our cities, may be greatly benefited, provided they be bled early, say within the first twenty-four hours. This is especially true when the pleura on one or both sides is involved, and this is not an infrequent happening. It certainly does relieve the suffering; and do not claim me as an optimist if I say that it may save life. Who of us, having been in practice thirty or more years, has not seen the greatest relief afforded by venesection in the case of a man in the full vigor of life, suddenly attacked, first by a chill, followed or accompanied with a cough, a high fever (temperature 103° to 105°), hurried respiration, severe pain in one side, thirst, anxious expression, and surface of body, more especially of the face and lips, etc., cyanotic? Twenty-four ounces of blood from the arm have been all that was required to change the gloom of relatives into joy, for relief has only antedated recovery.

I shall not now combat the prevalent opinion of its being a general, specific disease, with a local lesion merely, for it does seem to me inexplicable that not alone should the lung tissue be involved, but that in many, and perhaps most of this class of cases, the inflammation extends by continuity to the pleura, and often to the membranes of the heart as well. But admitting for the nonce that it is not *sui generis*—that it is a specific disease—does that lessen the importance of this mode of treatment, when the principal cause of death is the failure of the heart's action, the right side having been taxed beyond the limits of endurance?

QUESTION VI.

IS ALCOHOL USEFUL IN THE TREATMENT OF CASES OF ACUTE
LOBAR PNEUMONIA, AND, IF SO, WHAT ARE THE
INDICATIONS FOR ITS USE, AND HOW IS ITS
USE TO BE REGULATED AS REGARDS
THE QUANTITY GIVEN, ETC.?

DISCUSSED BY

JOHN SHRADY, M. D., of New York County, and
E. D. FERGUSON, M. D., of Rensselaer County.

DR. JOHN SHRADY.

IN approaching the therapy of this disease, all expect to be beset by difficulties many and various. Being the most obvious of maladies, from the days of Hippocrates down to the present, pneumonia in treatment probably represented the usages of every school which at any and all times swayed professional opinion. Having a typical history, and running its course with rapidity, it furnished opportunities for observation which were improved to the utmost by the medical philosophers of every age. As a curious commentary upon our art, and despite adverse criticisms upon the practices of predecessors, fairly sifted statistics show but little progress in results. We are ever obliged, indeed, to separate numbers from cases. To put it more clearly, the average mortality of the disease (one in three and one in five) has remained at about a fixed point. There have doubtless been much twisting in the way of excuses for this mortality and some exaggeration of the gravity of individual cases, but the fact still remains, even in the widest columns of figures. Every remedy and every mode of treatment has been tested—great names have shed luster upon plausible theories—and yet we waver in our faith.

Without discussing the question whether or not the type of the human constitution has really changed, our predecessors appear to have been equally well satisfied with both venesection and nihilism. No one authority has claimed to have cut short the disease by any method, but only to have allowed of a more speedy recovery. Luxury—and I use the term in its most liberal sense as a synonym for increased comforts—while it has weakened the resisting power, has actually gained in “the expectation of life.” Hence, the difficulty of discrimination between cures and recoveries meet us at every turn. In all our nosology there is nothing comparable to pneumonia for individuality, and of necessity, therefore, there can be no such thing as a test case. Furthermore, without parallels there can be no mathematics, and without mathematics there can be no criticism of methods. Perfect analogies can not here come into play in the settlement of doubts.

Most writers deprecate all attempts at routine treatment, but from the time of the ancients down to a comparatively late period the reliance of physicians has been mainly vested in expectancy. What has justly been termed nursing, together with the close study of nature, was most in vogue. The “restorative method of Bennett,” and “meeting emergencies as they arise,” are synonymous expressions of the same ideas of practice. Active interference in the treatment of all acute diseases, notably by large bleedings, sometimes indiscriminate and remorseless, succeeded to the doctrine of “*vis medicatrix naturæ*,” by way of reaction. Even at the present time there may be found survivors of the first semi-centennial of the present century who can show many scars of the lancet, some of whom practiced venesection as a merely prophylactic measure at the beginning of every spring. Venesection, in fact, became a ceremony of purification. Broussais (1816), in the disease under discussion, bled to syncope; so did our own Rush, and such was generally the custom. Laennec, who recognized the connection between lesions and symptoms, opposed copious bleedings (ten to sixteen ounces), but, becoming dissatisfied with his statistics, faltered, and subsequently followed Rasori in giving antimony in rather

full doses. Louis entertained similar views, and in this connection it may not be out of place to quote Watson, who, not without reason, advocated *early* bleeding as tending to abort the exudative stage. "Both reason and experience," says he, "attest the especial power of bleeding upon acute pneumonia. Very lately one most distinguished French writer, M. Louis, has endeavored to show that venesection has not much control over the progress or event of pneumonia; and I advert to his opinion on this subject merely to caution you against being misled by it, as you otherwise might be, considering his well-merited reputation as an exact and faithful observer."

Trousseau, who condemned the practice of exhausting the disease by exhausting the patient, still held somewhat to the antiphlogistic method, and in particular vaunted the praises of antimony, but in diminished doses. But, judging from the guarded qualification of statements, we may infer that none honestly plumed themselves upon results. Thus far, this short *résumé* has been given to represent the progress of professional opinion. As there was not much of wholesale condemnation and bitter controversy, the inference is clear that nowhere was there much stubbornness of conviction. All were pretty much left to their own devices.

Dr. Todd,¹ in 1853, reported eighteen cases of typhus fever, the treatment of which consisted in administering ether every half-hour or every hour, day and night, from half an ounce to an ounce of brandy, with a draught every second hour containing ten minims of chloric ether and five grains of carbonate of ammonia. "Subsequently," adds Stillé, "Dr. Todd and his disciples fell into the error of extending this treatment to all acute diseases." Pneumonia accordingly presented itself as an inviting field, and was soon occupied. Niemeyer, who, along with Magendie, Skoda, Schmidt, and Legendre, represented the Vienna, or expectant, school, protested to the following effect:

"By giving large doses of camphor, musk, and strong wine, we are often able for about twenty-four or thirty-six hours to support the action of the heart, arrest the progress of the œdema,

¹ "Times and Gazette," August, 1853, page 217, quoted by Stillé.

and facilitate expectoration. . . . The treatment of all cases of pneumonia by alcohol, as proposed by Todd, is not approved."

Trousseau¹ says: "The more vigorous and healthy a constitution the more will stimulants act on it;" and appears, on the whole, to favor the use of the alcohols only in limited quantities, and under certain restrictions. Among the objects aimed at was a prompt stimulation of the heart, with the hope of tiding the patient over his difficulty.

As alcohol in some one of its forms of brandy (49 to 60 per cent.), whisky (50 to 60 per cent.), rum (60 to 77 per cent.), or gin (alcohol 50 to 60 per cent.), came to be employed almost universally in pneumonia, if not by the medical attendant, certainly by the nurse or an over-busy friend, there could be no opportunity of a negative comparison of results. Faith in the efficacy of stimulation in disease is too deeply rooted to be disturbed—its agreeableness finds many advocates. As a medicine, I think it is much overrated; the claim that it is a needed nutritive material, and, if not that, assuredly a preventer of tissue waste, is probably untenable. The evolutionists might argue that its acceptability is due (1) to heredity and (2) habit. The weight of authority, I admit, is rather in favor of alcoholic stimulation—some advocating its use from the onset of the disease to its end, others in all low forms of the same—but, when we discuss the question from a clinical stand-point, it takes on quite a different complexion. We must then consider whether we have begun the use of our brandy or whisky, for example, when the patient was moribund, or whether the quantity exhibited was too large.

After all,² conceding that alcohol stimulates the digestive secretions and the gastro-intestinal movements, we must acknowledge the extent of its power; beyond that we merely conjecture.

¹ "Treatise on Therapeutics," vol. i, page 37.

² Dr. Parkes says: "Two fluid ounces of absolute alcohol seemed to increase the appetite, with larger quantities it lessened or destroyed it. The commencement of narcotism marks the time when appetite and circulation begin to be damaged." "Proceedings of Royal Society," May 19, 1870; cited by Dr. Octavius Sturges in "Natural History and Relations of Pneumonia."

As regards quantity, Dr. T. Henry Green¹ propounds the rule, that "in most cases from four to eight ounces of brandy in the twenty-four hours will be sufficient; if the *æsthenia* persists, it must be given in very much larger quantities." A pint or more of brandy in the twenty-four hours is recommended by Roberts, in his "Theory and Practice of Medicine."

Dr. A. T. H. Waters, of London, says: "As a rule, when the pulse is below 100 the case is not a grave one, and will yield to treatment of a simple character; but when it rises to 110, 120, and upward, the case is more serious. The more frequent the pulse the greater is the need for stimulants; . . . intermission of the pulse is an invariable indication for the free use of stimulants. In the pneumonia of aged people, stimulants may be given without hesitation." The victims of chronic alcoholism, or of delirium tremens, can not, I add, well rally without them.

Much has been said about alcohol lowering the temperature of the body, but the late Dr. Parkes controverts this view. He concludes that its effect "on temperature in healthy men is extremely slight; there is no increase, and in many persons no decrease. In those in whom there is a slight decrease, the amount is trifling." This conclusion, however, does not apply to large doses. During the late war, whisky, as being a home production and not at all subject to hypothecation, was unstintingly used in the treatment of all diseases, pneumonia of course among the rest. I may add that it was so persistently exhibited that there was no room for comparison with other methods. But the conviction that it was not essential, and that it was not certainly a febrifuge, grew apace in the medical mind long before the cessation of hostilities. Many fancied that with the diminished supply, whenever the military lines were cut, there came better recoveries and fewer deaths. As regards the dose, the rule adopted was that advocated by the schools, of giving the whisky until it could be detected upon the breath; and, to the credit of the soldiery, I may add that the majority submitted without a murmur to the treatment. To those accustomed to the use of stimulants a more liberal supply should be given than to the

¹ Quain's "Dictionary of Medicine," American edition, page 883.

temperate or abstemious is the usual advice of the books; but what should be the limit to the London cabman, who takes his couple of quarts of whisky a day?

"Ah! brandy and ammonia—another death!" was the exclamation of an old-time apothecary of the New York Hospital; and in the interest of truth it must be said that he was almost invariably correct. The same may be said of tracheotomy in croup, where the statistics are not much better.

Taking the pulse as a guide to the extent of the pneumonia—the greater the rapidity of the former, the greater the surface involved of the latter—I shall not inveigh against the judicious use of stimulants, but, as may be inferred, I regard alcohols as a forlorn hope. "For myself," says Dr. Sturges, of the Westminster Hospital, "I will confess that I know of no stimulant in the fever-like prostration of pneumonia that seems to me so good as brandy; yet, while I can recall cases that appear to have been kept alive by its use, I could never discover *how* alcohol becomes thus serviceable, or what peculiar symptom was altered by it." When given as milk-punch, we gain somewhat in nutriment, and, along with it, a goad to digestion; and this form of administration I am inclined to advocate in preference to the practically "*ad libitum*" method. But neither he who gives, nor he who withholds, can be censured by the inward monitor; nor should we condemn any plan without a knowledge of the given case. Let the question be an open one.

Indeed, in summing up the whole matter, I am reminded of the conclusion of a former war-comrade, that "of all arms, artillery made the most noise, and did the least execution." In this instance, let the application be in a double sense.

DR. E. D. FERGUSON.

My text is naturally divisible into two parts, the first of which, "Is alcohol useful in the treatment of acute lobar pneumonia?" I shall at once attempt to discuss. The answer is to be derived from evidence obtained from two sources—clinical experience and the physiological effect of the drug on man in appropriate dosage.

I am not aware of any statistics, based upon the treatment of a large number of parallel cases, in which the treatment and environment have been identical. I can not oppose one set of cases in which alcohol had been administered against another in which it had been withheld. I am not sure that even any experiment of contrasts could be so devised as to avoid sources of error. Therefore, as far as clinical evidence is concerned, we are obliged to rely, to a great extent, upon the conclusions of accepted and competent observers. The evidence thus obtained can not be taken without demur, nor can it be formulated in mathematical terms. As law is the nearest human approach to justice, so here probabilities strive for the goal of truth. Cases may be individual, but not entirely parallel.

The administration of alcohol, under the title of a "stimulant," is now so frequent in a variety of maladies that its use with a view to a supposed "increase of vital energy and strength of action" is familiar to all; and yet I find that its free or common use in the disease under consideration does not pass unchallenged. Many authors, I think, do not advocate it through fear of its abuse.

The distinguished author of the opening paper regards the use of alcoholic stimulants as beneficial in a large proportion of cases, but warns that, "if pushed to an injudicious extreme, they are as potent for evil as they are potent for good when judiciously used."¹ Loomis, while approving highly of the use of alcohol in cases of pneumonia where the tendency to death lies in the direction of heart-failure, says, "but its indiscriminate use is more dangerous than indiscriminate bleeding";² and again, "in no disease is so much discretion required in the administration of stimulants."³ A somewhat curious commentary on the foregoing aphorisms is furnished by the same author in his treatment of lobular pneumonitis, concerning which he states that, "as a rule, stimulants must be commenced at the very onset of the disease, and continued throughout its entire course; the quantity to be administered is to be determined by the ne-

¹ Flint's "Practice of Medicine." Philadelphia, 1881, p. 177.

² "Practical Medicine." New York, 1884, p. 98.

³ *Ibid.*, p. 99.

cessities of each case.”¹ No evidence is adduced for this apparent distinction in therapeutic indications. Bartholow, though entering quite fully into the *treatment* of pneumonia, gives only passing allusion to alcoholics, the principal being—“in weak subjects a little wine may be given from the beginning,” and “the pneumonia of the inebriate requires alcoholic stimulants from the first symptoms.”² Bristowe speaks approvingly of its use, “when the pulse becomes very quick and weak.”³ Prosser James, in his “Therapeutics of the Respiratory Passages,” permits its use in cases of heart-failure, but contrives to impress upon the reader the perils of the remedy, his fears being in the direction of moral considerations—at least they so appear. Watson recommends its administration when delirium or a weak pulse is present, and Juergensen says, “in the antipyretic treatment of pneumonia, I regard it as a *conditio sine qua non* that the patient should take light wine, in amount suitable to his age and habits; for an adult, say, from half to a whole bottle daily.”⁴

The majority of modern authors refer more or less fully to alcohol as a useful agent in the treatment of pneumonia, although its great apostle, Dr. Todd, is not so enthusiastic in advising its administration in that disease as in typhoid fever. Those who have referred to the question in the medical journals of the past few years have, on the whole, concurred in advising its use in the majority of cases. Yet some of these have given their sanction with a warning, as Dr. Delafield, who says, “Unless it is required as a cardiac stimulant, the patient is better without it.”⁵ Some curious views have been advanced, one of which is that “in children and young people it exerts no favorable influence on the course of the disease,”⁶ and that “in cases of pneumonia, where there is valvular disease of the heart, alcohol is to be avoided.”⁷ This is in striking contrast with the views of

¹ “Practical Medicine.” New York, 1884, p. 108.

² “Practice of Medicine,” 1882, p. 340.

³ “Theory and Practice of Medicine.” Philadelphia, 1876, p. 395.

⁴ Ziemssen’s “Cyclopædia.” New York, 1875, vol. v, p. 167.

⁵ “Medical Record,” New York, vol. xxiii, p. 238.

⁶ “Medical Record,” vol. xxii, p. 601.

Dr. Jules Simon, who says that "in ninety-nine cases of pneumonia out of one hundred occurring in children the treatment should be alcohol and fly-blisters."¹

Dr. J. Burney Yeo concludes that "many cases of pneumonia require no alcohol, while many cases could only be kept alive by alcohol."²

My quotations, as you may see, carry with them an air of hesitancy, being impressions rather than opinions, much less injunctions.

The conclusions reached by most physicians, as to the utility of a remedy of somewhat varied application, are generally deducible from analogical observations of different maladies. In following this method I am reminded of the apparent benefit of alcohol in the case of one of my own children, less than eight years of age, whose immediate danger was due to pulmonary œdema, connected with scarlatinal nephritis. Death for many hours was imminent, through inadequacy of an over-taxed heart, even in the event of the nervous centers holding out, and the air-passages remaining unoccluded by the effusion. Here an honest pint of approved brandy was given in less than twenty-four hours. The heart was supported and the child saved.

Increased tolerance of alcohol in certain cases of disease is a striking fact, and should not be forgotten, even if it can not be explained in estimating the reasons for its use. In some cases the capacity of the stomach to retain it appears to be the only limit to its administration. Such was the observation of Dr. Tully, even thirty or forty years ago.

As against this, in cases of extreme danger, even when death seemed inevitable and near at hand, no plan of treatment—at least, none that appealed to the senses—could be credited with the unlooked-for recovery. In such instances, stimulants might have been administered after improvement had begun, and so might have robbed Nature of her glory.

Were we to implicitly believe the *ex cathedra* opinions of the authors of systematic treatises regarding the power of alco-

¹ "Medical Times and Gazette," 1881, vol. i, p. 137.

² *Ibid.*, 1884, vol. i, p. 724.

hol in the treatment, we might be justified in its exclusive administration; but can we reconcile the physiological effect of the drug with the effects and tendencies of the disease?

I have purposely avoided any reference to the management of pneumonia under a total-abstinence plan, for I know of no statistics, either from private practice or from public institutions, which could, in my judgment, be of service in settling the question of its utility from that stand-point.

I will briefly abstract some of the evidence from experimental observations as to the effect of alcohol on the human economy in health, and note in connection therewith its apparent action in certain morbid conditions relating to the treatment of pneumonia.

Can alcohol be regarded as a food? Here the controversy has been long and bitter, and the echoes of the strife have not yet died out, but it would seem that the combatants busied themselves more with the social than the scientific aspect of the question. While there may be an honest difference of opinion as to the special and proper place for alcohol in a dietetic table—as to whether it is a direct or an indirect food—there can be now no doubt that, being destroyed within the human organism, it is a force-generator, and as such is in reality food. That some of it can be regained, unchanged, through the lungs, skin, and kidneys, should not be considered a controvertent argument. In theoretically estimating its capacity to produce energy, Dupré states that one ounce of alcohol consumed would supply the demands of the circulation and respiration (of course, for a limited time) as long as five ounces of lean beef.

The fact that alcohol can be directly absorbed without any preparation or digestion, further than a proper dilution, renders it specially available as a food in cases of disease in which the digestive powers are enfeebled; and, still more important, when the time to complete the ordinary processes of digestion may imply a delay fatal to the patient. Even though a sufficient store of nutritive material may exist in the tissues of the body, the withdrawal of it from its places of storage may be a source of perturbation and injury, so that an article which is capable

of furnishing energy, without taxing the ordinary functional activities, becomes of great importance in those diseases in which there is necessarily an exhausting demand on the physical forces of the body.

As relating to its value as a food, it may be stated as a fairly probable conclusion that concomitant with its use the excretion of tissue-change products is certainly diminished. At any rate, this would show a conservation of the pre-existing constituents of the body.

One effect of alcohol, when taken in moderate doses, is to produce a tranquil and self-satisfied state, which fact may be brought to bear in pneumonia for the subduing of that restless irritability which is not due to dyspnoea. That delirium associated with pyrexia or exhaustion, and independent of organic changes in the brain or mere toxæmia, as in renal disease, is often benefited by alcoholic stimulants, is a fact to which I can bear cheerful testimony.

Alcohol in large doses, administered with the view of reducing temperature, is not exactly the best of agents for that sole purpose, as long as antipyrine and the like can come into a more successful competition.

It is now thirty years since Stokes attracted attention by his advocacy of alcohol in fevers, basing the indications for its use on the condition of the heart, as manifested by the usual disturbing symptoms.

Whatever may be their special views of the effects of alcohol, writers are practically united in regarding it as a heart-stimulant, though I confess that the term used as such does not seem capable of an exact definition. Whether the influence is through directly increasing the vigor of the cardiac systole, or is induced occasionally by diminishing the resistance in the vascular system, or by both methods, is not clearly settled.

In health, ordinary doses of alcohol increase the frequency as well as the force of the pulse, but that is not the effect in most cases of febrile disease. I think it will not be denied that when there is increased frequency of the pulse due to adynamia, the tendency of proper doses of alcohol is to diminish the fre-

quency and at the same time to increase the force of the cardiac contractions. This power over the heart is emphatically stated by most authors. Juergensen says, "The stimulant is, in fact, not only a whip to the heart, but oats besides, because it supplies the organ with oxygen, without which muscular work is impossible"¹—a remark clinically true, but shaded with a somewhat doubtful chemistry. This must be borne in mind, that in pneumonia the right and left ventricles are both overtaxed, and we should not miss valuable therapeutic hints by directing our attention merely to the pulse, and neglecting to interrogate the heart itself.

One of the first points in connection with the consideration of the pulse is its rate or frequency, and this (due allowance being made for age, sex, and special causes of disturbance or nervous excitement) will often furnish valuable information. When the frequency exceeds, in the adult male, 100 to the minute, it should, in pneumonia, be considered as denoting asthenia or overtaxation of the heart, the degree of which is increased with the rise in frequency, so that at 120 or 140 the condition becomes serious, so far at least as can be indicated by the pulse-rate.

There is a certain vibratory character to the pulse, denoting an irregular tension of the arterial system, and a grave degree of asthenia, which, although temporary and not essentially serious, seems to especially call for stimulation.

Whenever in pneumonia the cardiac signs as well as the pulse show a failure in the strength of the heart, there can be no question as to the propriety of using whatever means will increase the vigor of the heart without counterbalancing injurious effects. While in my judgment alcohol is not the sole agent indicated as useful, I believe it to be one of the most valuable means at our command for temporarily increasing the strength of the heart muscle, and, though only a bridge, we must remember that life itself is made up of bridges in series.

Though I know of no claims that alcohol benefits by reason of its antiseptic properties, yet, in view of the quite common acceptance of a parasitic cause, it is not irrational to suppose that

¹ Ziemssen's "Cyclopædia," vol. v, p. 175.

large doses may limit the activity of the micrococci, even if it can not destroy them, and thereby favorably influence the progress of the malady.

I have been unable to see any valid reason why the use of alcohol should be specially modified on account of age, except in dosage. With the aged, where the heart is failing from senile changes, should it not be *more frequently* required?

Aside from idiosyncrasy, I have not been able to find contra-indications to the moderate use of alcohol in any case of pneumonia, though it may be often unnecessary from the natural tendency to recovery. I have been puzzled at the book-warnings concerning its possible injurious effects, except on the score of immoderate use, an objection just as applicable to arsenic, opium, or other potential drugs.

The doses of alcohol should be repeated at somewhat frequent intervals, as the stimulant effect on the heart is rather evanescent, and the maintenance of an equable influence is desirable. There should not be a lapse of more than three hours before a new dose be given, in order that the operative effect be continuous. When the quantity to be administered is large, it is often less troublesome to the patient to give it in divided doses at half-hourly or even less intervals, the form of administration and the kind of liquor used being adapted to the taste of the patient. In the majority of instances milk-punch made with rum, whisky, or brandy will be found eligible and doubly useful, on account of its value as a food.

In urgent cases, it being impossible to bring about a normal condition, we must be content with varying degrees of improvement, and always refrain from further increase in dosage if the improvement be well marked. When the pulse comes within the danger line we can not expect much if any benefit from an increase of the alcohol. Often, in fact generally, from a half to one ounce of whisky, repeated at intervals of one to two hours, will suffice to fulfill the indications, though the administration of equivalent quantities of wine, particularly those containing carbonic acid, will often prove more acceptable, and therefore more useful to the patient.

The tolerance for alcoholic stimulants occasionally established in pneumonia is one of the remarkable, and I believe significant, facts of clinical medicine; and, unless there be evidence of injurious influences connected with its use, it is justifiable to increase the quantity administered until a beneficial effect is noticed—though in the administration of large doses the case should be under competent and continuous observation—as much for the sake of giving the patient the benefit of a sufficiently rapid increase as to guard against toxic doses.

While I can recall from my own experience a number of instances of the apparently beneficial effect of large quantities of stimulants, I shall omit them, and cite two instances which transcend anything occurring under my own observation. The first is related by Dr. Flint, in which brandy was administered, to the extent of two ounces hourly, to an infant of fourteen months, for how long is not stated. The patient recovered from the pneumonia complicating the pertussis, notwithstanding the condition was one implying extreme danger.¹ Dr. Tully relates an instance that occurred in the practice of a Virginia physician, in which eight pints of whisky were administered in twenty-four hours to a patient ill with pneumonitis typhoides notha, “not only without injury but with benefit.”² Dr. Tully regrets that the “proof” of the whisky had not been taken (and we may say the *proof* of the story as well), but, granting that the brand was even poor, the story still remains remarkable, and is only equaled in my knowledge by the amount of alcohol reputed to be consumed in cases of snake-bite.

¹ Flint's "Practice." Philadelphia, 1881, p. 180.

² Tully's "Materia Medica," p. 1065.

QUESTION VII.

TO WHAT EXTENT IS IT SAFE AND USEFUL TO EMPLOY AN-
TIPYRETIC MEASURES OF TREATMENT IN CASES OF
ACUTE LOBAR PNEUMONIA, INCLUSIVE OF
THE COLD BATH, SPONGING THE
BODY, OR THE WET SHEET?

DISCUSSED BY

GASPAR GRISWOLD, M.D., of New York County,
CHARLES G. STOCKTON, M.D., of Erie County, and
WILLIAM S. FULLER, M.D., of Monroe County.

DR. GASPAR GRISWOLD.

Two pathological factors stand out prominently in the course of pneumonia: 1st. Consolidation of lung-tissue. 2d. Fever.

Consolidation of lung-tissue has two important results: 1st. It diminishes the extent of surface available for respiration. 2d. It constitutes an impediment in the pulmonary circulation. It is established by observation that the diminution of respiratory surface and the impediment in the pulmonary circulation are not enough to cause dyspnœa or appreciably accelerate the pulse as long as the temperature is normal. With fever comes a demand for more oxygen, and it is the effort to supply this increased amount of oxygen which causes rapid respiration and quickening of the pulse. When the fever abates, dyspnœa is relieved, and the pulse again approaches the normal, although the condition of the lung remains unchanged.

The fever in pneumonia usually reaches 104°, and in about 65 per cent. of the cases this ceases between the fifth and eighth day. Fever does not usually, therefore, range high enough or last long enough to be a source of danger in itself; it claims our attention mainly because it causes dyspnœa, and compels the heart, especially the right ventricle, to do an excessive

amount of work. Cardiac exhaustion, the principal danger in pneumonia, is not likely to occur in uncomplicated cases unless the temperature remains in the vicinity of 105° for three or four days.

These brief considerations sufficiently emphasize the importance of antipyretic treatment in pneumonia; and it may be confidently affirmed that a system of therapeutics which can keep the temperature below 101° , without depressing the patient, must tend to remove uncomplicated pneumonia from the list of dangerous diseases. My remarks refer to average favorable cases; pneumonia at the extremes of life or in drunkards requires separate consideration.

Before approving any antipyretic measure, we should be sure, in the first place, that it is really efficient, and capable of reducing the temperature several degrees; in the second place, and this is quite as essential, we should provide that it is not attended with disadvantages or dangers sufficient to counterbalance its good effects. Most antipyretic drugs are cardiac depressants—a peculiar objection to their energetic use in pneumonia, where cardiac failure is the great danger. The application of cold water to the surface of the body is a great shock to traditional opinions about “catching cold,” and, although the view that pneumonia is an infectious constitutional disease, and not merely a local inflammation, has done away with much of the objection to the use of cold, yet it is a very radical change to take off the oiled-silk jacket and plunge the patient into cold water. Such a change in opinion and practice must be arrived at by slow degrees, and only after careful consideration.

The antipyretic drugs which have been used in pneumonia are *veratrum viride*, aconite, quinine, salicylate of sodium, and antipyrine. Kairine has been generally abandoned, and can not be considered in what is intended to be a short practical paper. Aconite and *veratrum viride* are essentially circulatory depressants, and can not be given in pneumonia in sufficient doses to lower the temperature several degrees without danger of paralyzing the heart. They are now scarcely ever used in pneumonia. Quinine is by many believed to be the best of its

class in this disease. If given in doses of from twenty to forty grains, it will usually lower a temperature of 105° to 104° or $103\frac{1}{2}^{\circ}$, keeping it down from three to six hours, or thereabouts. It is here supposed that the drug is given at a time of day when the fever would naturally be high; a fall of temperature occurring during the early morning hours, which is nothing more nor less than spontaneous, could not be fairly attributed to any medicine taken. The disadvantages of quinine are that it takes four or five hours to develop its effects, and then does not usually depress the temperature more than one or two degrees. Large doses are apt to be followed by vomiting, deafness, disturbances of vision, cardiac depression, and, last not least, great general discomfort. It is often on the sixth day, or later, that high temperatures are observed in pneumonia, usually associated with a rapid and feeble pulse; these are especially the circumstances under which a reduction of temperature would be likely to save life, but they are also circumstances under which a thirty- or forty-grain dose of quinine may dangerously depress the heart. Most authorities to-day, with high temperature and feeble rapid pulse after the sixth day in pneumonia, are inclined to depend entirely on stimulants, preferring to let the temperature stay up, rather than incur the risk of trying to bring it down with large doses of the drug in question.

Salicylate of sodium must be given in a dose five times that of quinine. It is almost sure to depress the heart, cause vomiting, deafness, and occasionally delirium. It has so many disadvantages that it is scarcely ever given in these cases.

Antipyrine,¹ as you know, is a new artificial alkaloid, a derivative of coal-tar, first made by Knorr, of Munich. It is a white powder somewhat like but less bitter than quinine, and readily soluble in water. It is a wonderfully efficient agent, and apparently safe beyond a peradventure, if judiciously given. A single dose of twenty grains, given to a patient with temperature 105° , pulse 120, respiration 40, will in two hours make him comfortable, with temperature 101° , pulse 100 or 90, respiration 30. About an hour after the medicine is given there is

¹ *Vide* "New York Medical Journal," April 18, 1885.

a more or less profuse sweat; the temperature usually begins to rise in about five hours after the medicine has been given, and reaches its former height in eight to twelve hours, when another dose will again reduce it. Nausea is much less frequent than after twenty grains of quinine. No ringing in the ears, deafness, or other nervous disturbance is observed; delirium is often subdued or quieted—may even disappear—the patient becoming rational during the cool period; but the delirium returns as the temperature again rises. The heart impulse not only becomes slower, but seems stronger; this is especially noticeable when a feeble vibratory pulse of 120 becomes firm and full at 90 beats per minute.

The application of cold water to the surface of the body in pneumonia has been enthusiastically advocated by German writers, especially Liebermeister and Juergensen, who claim to have thereby reduced the mortality one half. Juergensen's own daughter, aged nineteen, had pneumonia, and a temperature of 105.8° ; finding that ordinary baths did not sufficiently reduce the temperature, he cooled the water to 41° F., and kept her in ten minutes. These cold baths he repeated as often as the temperature rose, until convalescence was declared. This is impressive, but loses some of its effect when later on, in the same paper, Juergensen states that digitalis should not be given when the heart is weak, but that seventy-seven grains of quinine is a proper and safe antipyretic dose in cases of high temperature with weak heart. It is difficult to be convinced by one part of a man's argument when the rest of it contains such extreme and revolutionary statements. No one in America, as far as I can ascertain, has used the cold bath extensively in pneumonia, or is strongly in favor of it. Cold water is certainly an efficient antipyretic when freely and energetically used in the form of bath or wet pack, but in asthenic cases, with weak hearts, the surface is apt to become livid and the extremities cold, while the rectal temperature not only does not fall, but may even rise! As a rule, the bath acts best where the cutaneous circulation is vigorous, and the heart strong; in asthenic cases, capillary stasis and cold extremities are apt to occur before the deeper circulation

has become cooled. Baths, unfortunately, act best in those strong patients who are best able to stand the fever, and who recover without antipyretics or stimulants; in cases of high temperature with weak heart, where it is most important that the temperature should be reduced, baths not only often fail to bring down fever, but even cause dangerous depression. Sponging and the wet pack applied sparingly are refreshing, not dangerous; but, even with this caution, they rarely depress the rectal temperature one degree. Applied energetically, they resemble more and more the bath in their effects; for, as soon as they are freely enough used to be decidedly antipyretic, they are contra-indicated in cases of weak heart, just as the bath is.

To summarize and formulate the preceding considerations:

1. Among antipyretic drugs, antipyrine is the most efficient, the least disagreeable in its effects, and apparently perfectly safe.

2. The Germans recommend seventy-five grains of antipyrine in divided doses, given in the space of two hours; they give as much as one hundred and fifty grains in twenty-four hours. American authorities for the most part agree that twenty grains in a single dose is quite enough. By giving twenty grains every six hours, the temperature can be kept down and the patient made comfortable.

3. Cold water applied sparingly in the form of sponging or wet pack is not efficiently or demonstrably antipyretic. Cold water in the form of baths, or very energetic sponging or wet packing, is quite efficiently antipyretic, but is contra-indicated in asthenic cases with threatened heart failure. Unfortunately, it is in high temperature with weak heart that antipyretic treatment is imperatively demanded.

4. In the present state of our knowledge the best antipyretic treatment in pneumonia would seem to be as follows: Omit the bath and the wet pack entirely. Moderate sponging may be resorted to in vigorous patients. Give antipyrine, every six hours if necessary, and keep the temperature down to about 101°. In asthenic and complicated cases combine a free use of stimulants with the antipyrine. Give antipyrine by the rectum if the stomach be very irritable. In patients with weak heart no medication

should be resorted to which causes vomiting and interferes with the free administration of stimulants.

DR. C. G. STOCKTON.

Either the high temperature of disease, or some unknown factor accompanying high temperature, opposes rest and nutrition—leads to sleeplessness and waste of tissue.

Experience teaches that, by lowering this high temperature, we lessen the severity of these symptoms and add to the patient's comfort. This is, however, not always the case.

When the depression of temperature is not followed by improvement in a patient's condition, antipyretics are injurious.

A pneumonia may be grave without great pyrexia, and, conversely, the temperature may be high without the case being serious. The recoveries under the "let alone" management prove the latter statement, and every physician's experience proves the former. Without antithermic treatment the greater proportion of patients convalesce; but, by means of such treatment, in *suitable cases*, I believe there follow less suffering and a greater percentage of recoveries. To this "extent are antipyretic measures of treatment safe and useful." Whenever not useful, they are hurtful.

Now, as to the special measures of treatment—"inclusive of the cold bath, wet sheet, and sponging the body." This introduces a subject requiring hours, instead of minutes, for discussion. Accordingly, under the circumstances, I shall content myself with a brief expression of my own views, added to those of a few well-known members of our profession who have responded to my queries.

Dr. S. Peyre Porchet, of Charleston, S. C., writes: "I have for many years been a great advocate for the use of cold sponging externally in all cases of high temperature. I use two towels soaked in ice-water; one I apply to the forehead, and the other I use in sponging the hands and arms. I keep this up for fifteen or twenty minutes, until the temperature is lowered. It is a powerful means when assiduously applied—quite agreeable enough to the patient, who generally resists wet packs and cold

baths. Besides, the method has the merit of being easily carried out."

Dr. N. S. Davis, of Chicago, uses only sponging with cool water, and says: "I think the excess of temperature can be more safely and uniformly controlled by frequent sponging of the surface with water than by what are known as antipyretic doses of drugs."

Dr. John B. Elliott, of New Orleans, uses cold sponging, confined to the extremities, in almost every case to some extent, with this explanation: "I depend chiefly upon quinine and its salts. Cold sponging aids materially the action of antipyretics, besides adding much to the comfort of the patient." The doctor adds that "the lay opinion which is set against the cold bath readily accepts sponging by way of compromise."

Dr. P. Jervais Robinson, of St. Louis, uses "cold sponging with water, or water and spirits, to a limited degree," remarking that "this is mainly because he has seen little occasion for its use." He has used as antipyretics "chiefly quinine and verat. viride, and, in asthenic cases, decided quantities of alcoholics."

Dr. J. T. Whittaker, of Cincinnati, "exceptionally employs cold sponging, applied to the chest—rarely to the body"; and states that he has had little occasion to use antipyretics in any form in this disease. When they are called for, he uses "cold sponge baths, and single, large, nocturnal doses of quinine."

Dr. John S. Lynch, of Baltimore, while he does not use external cold in the treatment of this affection, explains his position in language which, I am sure, echoes the sentiments of many able clinicians. He writes: "I wish to say that while I have never used cold as an antipyretic in croupous pneumonia, it is only because I have never met with the conditions which, in my opinion, justify it—viz., a temperature so high that there is danger of collapse before it can be reduced by the ordinary antipyretics, or symptoms (coma or convulsions) which show that the nervous system is already profoundly affected by the excessive pyrexia. These I think to be the only conditions that require the use of cold water, which, while rapid and certain in its effects in reducing temperature, is, nevertheless, evanescent, and

requires frequent or constant application. The plan is troublesome to the attendant, and very annoying, not to say uncomfortable, to the patient. I have heretofore always relied upon veratrum viride, quinine, salicylate of sodium, and more lately on antipyrine. These I have generally found so reliable and effective that I have felt no temptation to adopt the cold-water treatment."

In my judgment, an antipyretic drug applicable to every case will never be discovered. To ask for it is like asking for fever without heat, or inflammation without fever, or pneumonia without inflammation. The selection of the appropriate antipyretic should depend upon the study of individual cases, and the physiological action of the same can only be approximately explained.

Cathartics lower temperature, and sometimes appear indispensable. They do not, however, receive their meed of praise on account of their being used as adjuncts to other remedies, or given for other purposes. Alcohol and digitalis are claimed to possess a like virtue, and are to be chosen in adynamic cases, especially when the disease accompanies inebriety; while verat. viride, aconite, and antimony are among the best remedies in cases of the sthenic type.

The salicylates are, of course, adapted to rheumatic subjects, quinine to those affected with malaria, and antipyrine is occasionally potent where other remedies have disappointed. In ordinary cases requiring an antipyretic, I employ quinine or antipyrine, because both of these are heart sedatives. I limit the dose to fifteen and twenty grains respectively, at intervals of twelve hours. If necessary, I would use cold sponging in addition, but can not unequivocally indorse the cold bath and wet sheet as being adapted to the people of this country, particularly to the native-born.

DR. W. S. FULLER.

Hydrotherapeutic applications are not quite as safe but more useful than all remedies in the treatment of lobar pneumonia. The hyperpyrexia seems to be, and is, the most important fac-

tor in this disease, producing results more dangerous to life than any other. Its suppression maintains the vital powers, thereby preventing emaciation, and sustaining the heart. It is safe to use the cold bath, wet sheet, and sponging down to a temperature that will not induce cyanosis or collapse. Three or four applications of the wet sheet, each of twenty-five minutes' duration, I hold to be equal to a cold bath of ten minutes.

The myriads of cutaneous capillaries are vastly influenced under the application of low temperature. The primary action of the cold bath to the skin lessens the size of the capillaries. Presently, however, the secondary effect of the continued low temperature, through reflex action of the vaso-motor system, is attended by immediate dilatation of the vessels and increased volume of blood in their canals. It is at this moment that a large amount of blood is relieved of its abnormal heat and sedation of the heat centers accomplished. If this is continued for a reasonable period of time the result will be most satisfactory. The pulse and respiration ratio will co-ordinate with the descending temperature, and the patient report himself quite comfortable. On the contrary, if the bath is continued until the temperature of collapse is reached, the capillary vessels again contract, and cyanotic, perhaps almost moribund, features present themselves.

I do not deem it safe to push the treatment too vigorously. The rule I have adopted is a bath at a temperature of 96° Fahr., gradually lowered until the thermometer under the tongue marks 98°. Adynamic cases—and under this head I embrace feeble and aged persons—should receive a slowly-descending temperature. The danger of removal to the bath may be avoided by cautious and skillful handling. The pneumonia of advanced age and of childhood is more difficult to diagnosticate than that occurring in adult life. An eminent French author says: "At these periods of age the organs remain, in some degree, independent of each other; they suffer separately, and the different lesions of which they are the seat scarcely influence them as a whole." They seem to be isolated. In lobar pneumonia, there is an absence of symptoms—as frequent cough, hot skin, and hurried

breathing. Hence, it is only by a recognition of the thermic condition and physical signs that the diagnosis will be established.

In childhood the opposite prevails. There is so much interdependence of the organs that numerous and multiplying symptoms present themselves. Cerebral disturbances, convulsions, and vomiting mislead in the diagnosis, and, as with the aged, we can only rely upon the physical signs and the fever.

The wet sheet and sponging I select as temperature-reducing agents in childhood, the aged, the adynamic, and the enfeebled. The necessity of the reduction is apparent when we recognize the fact that fever seems to be the most important factor in lobar pneumonia.

Of the drugs in vogue, antipyrine is among the most potent, safe, and useful in the suppression of hyperpyrexia; its only rival is the lately-discovered hydrochinon, which never excites any nausea of consequence. The most elegant excipient for its administration is syrup of tolu, which conceals its slightly bitter taste. In large and frequent doses, the toxic effect of the remedy will appear in the form of cyanosis, collapse, low temperature, profuse perspiration, cerebral disturbance, and nausea. Antipyrine, in forty to sixty grain doses, has power to induce toxical phenomena, such as will excite motions of voluntary muscles, independent of, and uninfluenced by, the will. It seems to be an excito-motor of the cerebro-spinal axis, and, according to Coppola, "The slight tetanic convulsions are due to the action on the brain, and are arrested in rabbits by a section of the spinal cord." I have lately seen persistent malarial attacks, which obstinately resisted large doses of quinine, immediately yield to the exhibition of twenty grains of antipyrine every three hours during the pyrexia, along with quinine in the interval. Recovery was complete on the fourth day, in each case. All these cases were accompanied with vertiginous (vertigo-gyrosa) symptoms, and slight tetanic convulsions of the voluntary muscles.

In the cases of lobar pneumonia which have lately come under my observation and care, the antipyrine was administered in doses of from fifteen to twenty-five grains every two hours,

reducing temperatures of 104° or 105° Fahr. rapidly to the normal.

This treatment with antipyrine does not seem to arrest or abort lobar pneumonia, nor do its relatives—kairine, thaline, or the very latest, hydrochinon. But under their influence the symptoms arising from the hyperpyrexia are speedily dissipated. The disease becomes less grave in its course, with a quicker convalescence.

The following case of acute phthisis shows the efficacy of antipyrine in suppressing and completely removing fever temperature:

Miss B., aged seventeen. The temperature of this patient on May 6, 1885, was as follows:

8 A. M.	.....	$97\frac{1}{2}$ degrees.
9 "	.....	$98\frac{1}{8}$ "
10 "	.....	$100\frac{3}{4}$ "
11 "	.....	$102\frac{1}{4}$ "
12 M.	.....	103 "
2 P. M.	.....	102 "

With a decline to 98.6° Fahr. at 5 P. M.

May 7th, the temperature was lowered by antipyrine. The following record gives the result:

7 A. M.	$98\frac{1}{4}$ degrees.	
8 "	$98\frac{1}{2}$ "	
9.15 "	$100\frac{1}{4}$ "	Administered antipyrine, 25 gr.
10.15 "	$99\frac{1}{4}$ "	Administered antipyrine, 15 gr.
11.15 "	$98\frac{1}{4}$ "	Administered antipyrine, 15 gr.
1 P. M.	96 "	
2 "	95 "	
3 "	$95\frac{1}{2}$ "	
4 "	96 "	
5 "	$97\frac{3}{4}$ "	
6 "	$98\frac{1}{2}$ "	
8 "	$98\frac{1}{2}$ "	

It will be seen from the record that the temperature was reduced to normal after the second dose, and continued so during the remainder of the day. This thermic condition was controlled in the same manner from May 7, 1885, until May 19, 1885. The

thermometric history need not be given, as the succeeding days were quite similar to the one reported.

At this time the antipyrine was discontinued, and no re-appearance of the hyperpyrexia was observed up to the time of her death, forty-five days later.

The prevailing register of temperature after the antipyrine was discontinued is as follows :

May 19th, 8 A. M.	97 degrees.
“ 2 P. M.	99 “
“ 7 “	99½ “
May 20th, 8 A. M.	96 “
“ 2 P. M.	98 “
“ 8 “	98 “
May 21st, 7 A. M.	98 “
“ 2 P. M.	98 “
“ 7 “	99 “

The fever temperature never again returned. During the administration of the antipyrine the cough and respirations were less frequent. The night sweats and œdema disappeared, while the sputa lessened rapidly in volume.

QUESTION VIII.

DO RELAPSES OF ACUTE LOBAR PNEUMONIA EVER OCCUR
DURING OR SHORTLY AFTER CONVALESCENCE, AND
DOES THIS DISEASE INVOLVE ANY SPECIAL LIAB-
ILITY TO OTHER DISEASES OR SEQUELS?

DISCUSSED BY

Dr. JOHN G. ORTON, of Broome County.

THE literature of lobar-pneumonic relapses is so nearly of a negative character that it leaves but little for me to say on this division of the serial questions. By way of introduction, I may premise that, during an uninterrupted service of thirty-two years in the "southern tier" district of this State, engaged in the general practice of medicine and surgery, I have never met with an unqualified case of relapse. While I am unable, of course, to vouch for the experience in this matter of my medical *confrères* in that section of the State, yet I think they will readily accord to myself at least an average degree of opportunity for observation. The recent records of the State Board of Health, as well as other accumulated statistics, show that acute diseases of the respiratory organs are fully as prevalent in the "southern tier" as in other portions of the State, and hence with an approximate uniformity of experience there should be a similarity of conclusions.

As far as my own opportunity for critical research has extended, the published records of this disease do not show that true relapses ever occur during or shortly after the period of convalescence. If the premises assumed by the majority of those engaged in the present discussion be correct, that pneumonia is an essential fever—a constitutional disease, with a local characteristic lesion—then we may readily see why an attack in passing on through its several well-defined stages, through the

period of convalescence (the specific causation having spent its force and subsided), should cease without prospect of its return. Why less than a case of small-pox after passing through its stages of incubation, fever, eruption, suppuration, and desiccation? These are simply my own conclusions, based upon personal experience. I am aware, however, that certain writers contend that relapses actually occur, and call attention to the observation in certain cases in which there has been temporary exacerbation of the pyrexia after the crisis has appeared. A critical clinical history of these cases would more than probably show that the disturbance of the course of the crisis was due to the progressive invasions of other portions of the lung, or of the opposite lung, or perhaps to a secondary inflammation in some other organ; but such are by no means to be construed as relapses.

These exacerbations may often be observed during the progress of the fever, and give to the pyrexia almost a remittent type. The disease is also not infrequently an intercurrent affection in the course of other essential fevers, and is subject to modification in its progressive stages by these and other complications, by hygienic surroundings, habits of patient, and by the mode of treatment.

I know that certain able foreign authors, as Wilson Fox, Ziemssen, Grisolle, Briquet, and others, mention having known relapses to occur, but none of them afford us any evidence whatever that the cases were free from complications, or more than mere progressive invasions of other portions of the lungs; in fact, in several instances to which they refer, some one of these existing conditions is naïvely admitted.

I venture to offer the following propositions:

1. That neither the morbid anatomy, etiology, nor clinical history of acute lobar pneumonia afford any positive data from which to substantiate the theory of relapses.

2. That after the period of convalescence is fully established in uncomplicated pneumonic fever, relapses never occur. Referring to the second portion of this question, namely, "Does this disease involve any special liability to other diseases or se-

quels?" I desire to have it understood that I recognize in acute lobar pneumonia the existence of a specific non-communicable fever, presenting a typical self-limited course, and with a characteristic local lesion.

Under the restrictions involved in this pathogenesis it may easily be conjectured that experience will be able to furnish only a very meager list of complications or sequels.

It is proper to premise that the gravity and danger of lobar pneumonia follow not in particular from the disease *per se*, but from co-existing affections and other concomitant circumstances. Bronchitis may be regarded as a very frequent affection associated and consequent upon an attack of pneumonitis, especially in the adult; it is, however, very much circumscribed and confined to the affected lobe or lobes, rarely involving both lungs unless the pneumonia be double. Primary bronchitis does not eventuate in lobar pneumonia.

Pleuritis rarely fails to exist as a concurrent disease, and always developed where the pneumonia reaches the surface of the lung covered by the visceral pleura. The pleuritis is usually dry, only a simple exudation existing and confined within the limits of the lobe or lobes involved. Effusion to an appreciable extent is comparatively infrequent, and rarely alters the course of the disease.

Pericarditis, although less commonly associated with pneumonia than with pleuritis, is a much more serious complication, proving fatal in more than half of the cases affected. It may occur within the first few days, or be detected only after the defervescence of the pneumonia. It is found with about equal frequency in pneumonias of the right and left side, which fact would seem to preclude, at least in a measure, the theory of extension of the inflammation from the affected lung to the pericardium; leaving us to conjecture if it be not more properly referable to an internal causative condition, or to secondary septic effects, or finally to the same cause which originated the pneumonia associated with a predisposing diathesis. It is certainly sufficiently frequent to be regarded as more than a coincidence.

In this connection I may mention the not infrequent occurrence, at least in fatal cases of pneumonia, of coagulation of fibrin in the right cavities of the heart. The formation of a thrombus is peculiarly favored in cases where a large portion of the lung is involved, especially in double pneumonia; causing obstruction to the free passage of blood through the lungs, distending and enfeebling the right side of the heart.

This diminished heart-power, in connection with an increased fibrin-factor of the blood in all cases of pneumonia, readily leads to coagulation and the formation of heart-clots. Granular degeneration of the heart muscle may occur in the course of pneumonia, accompanied with a persistently very high temperature.

Meningitis occurs not as an occasional complication but as a secondary disease. The vessels of the brain are generally more or less engorged. Juergensen says that croupous pneumonia seems to produce a special disposition to cerebral affection. I am not prepared by facts to substantiate this view of the subject.

Gastro-intestinal catarrh is also sometimes present in severe attacks of pneumonia, and, as recorded in the "Medical and Surgical History of the War," was quite frequently observed in southern localities.

Distinct jaundice is not a rare complication, due perhaps to the impeded circulation in the lungs, causing congestion of the liver, or to the associated gastro-duodenal catarrh. The theory of the extension of the inflammation from the affected lung to the liver is not regarded with favor, I believe, by pathologists.

Acute Bright's disease is liable to supervene during an attack of pneumonia, and, according to the tables of Huss, is associated in fifty per cent. of the cases terminating fatally.

There are a few other sequelæ of pneumonia which, although rare, may be properly mentioned.

Gangrene of the lungs, it is estimated, occurs in about two per cent. of all cases of pneumonia, and is more frequently a termination in the aged, and also in those possessing a lowered condition of the vital forces. Still this assigned ratio is very debatable.

Abscesses are occasionally found, particularly in cases where

exhaustion exists from whatever cause, and are said more often to involve the upper than the lower lobes; they may also follow the stage of purulent infiltration or suppuration.

Cirrhosis is an exceedingly rare termination of an attack, and likewise parotitis, and inflammation of the joints.

There are at least two other important sequelæ which are liable to follow after an onset of pneumonia. I refer to the occasion of a sudden disturbance of the function of a lung, inducing hyperæmia and œdema of the other lung, a sort of compensatory congestion. This obstruction to the pulmonary circulation also induces overdistention of the right cavities and the veins, and ischæmia of the arteries.

Statistics, as well as my own observation, lead me to the belief that an attack of acute lobar pneumonia predisposes to a repetition, or at least induces a proclivity to its return, not as a relapse, but as a primary attack with intervals of months or years. It is also in evidence that the lung first involved is more likely to suffer in the future. This, however, merely proves a tendency, and is not to be construed as an answer within the limits of this discussion.

Referring to those cases of pneumonitis which seem to be more protracted than is usual in the uncomplicated, we are forced to recognize a condition or stage not necessarily of chronic pneumonia *per se*, but of delayed resolution, the result of a diathesis or of a depraved vital force. Under these circumstances we may have an interstitial inflammatory process established during the stage of gray hepatization, and the retrograde metamorphosis of the exudation preparatory to its extension arrested.

This brings me to the consideration of a vital point implied in the discussion, namely, Does acute lobar pneumonia involve any special liability to tubercular phthisis?

Until we are prepared to accept the theory so ably advocated by a member of the Association, that "tubercular consumption is never inherited, always produced," I am quite contented myself to remain on a middle ground; believing it more than probable that tubercular phthisis may be both inherited and acquired. Without reference to this mooted question, clinical his-

tory has seemed to establish the fact that a non-resolved pneumonia involving the upper lobe is frequently the starting-point of phthisis, perhaps tubercular, perhaps not.

If morbid anatomy has settled one point more than another in diseases of the respiratory organs, it is that acute lobar pneumonia is located far more frequently at the base of the lung, and tubercular phthisis in the apices. May not the exceptions to these characteristics afford an explanation of the phenomenon of pulmonary consumption supervening upon an attack of pneumonitis involving the upper lobe?

It may not maintain the relation of a necessary sequence, but as a predisposing or exciting cause for the development into activity of latent tubercle, or furnishing a properly-prepared organism, a *nidus*, for the tubercle bacillus.

Thus, Mr. President and Fellows of this Association, as reader of the last paper in this important discussion, I hope to have added my humble mite in stimulating thought. I am sensible of defects in my own effort, and would gladly have given more labor for your benefit, but the necessity of other duties has thwarted my desire. I can but thank our distinguished co-worker for the pleasure afforded in thus directing us to so delightful a field of investigation. For myself, I owe him much, and I know that in saying this I but voice the sentiments of every member of this earnest body of physicians. In my researches I have been edified, and I am conscious also of a gain in the precision of my own knowledge, and this reward, I trust, my brethren have likewise shared.

GENERAL DISCUSSION.

Dr. FREDRICK HYDE, of Cortland County.—I do not propose to go into a discussion of the points. I merely desire to advert to the matter of mortification or gangrene, as a result of pneumonia. I do so for the reason that according to my observation this termination is not quoted in statistics. Now, the cases which have ended in this way have occurred, a larger proportion of them, at about middle life in connection with bad conditions of nutrition, and more especially in broken-down inebriates. I am unable to venture an opinion as regards the part played by therapeutics in modifying the conditions tending to death. Perhaps but little has been effected, even when the physician has had the advantage of a very early summons.

Here, in pneumonia, is an impaired condition of the vascular texture, and I have known death to occur in about three days. I remember this, that according to the autopsies, so far as they have been obtainable, there has been an early and persistent thrombosis as well as embolism of the veins. In two cases I recall the fact that this condition of embolism was marked in the arteries as well. I make this point from my own limited field, that patients die from such causes and are reported as dying from something else.

Dr. H. C. LYMAN, of Chenango County.—I rise to ask the experience of the Fellows in the use of oxygen gas in the treatment of acute lobar pneumonia.

Dr. JOHN CRONYN, of Erie County.—I think the introduction of its use is entirely too recent to have the Fellows know much about it.

Dr. JANEWAY.—I have used oxygen with much success in certain cases. I resort to it just as soon as cyanosis shows itself, or even before, if that condition be imminent. The extent of lung tissue involved should then guide us to a pretty accurate forecast. When the cyanosis disappears, I let up; when it reappears, I resume, and so on. I see that it be ready at hand for such an emergency. I remember three cases where the upper and lower lobe of one side, and the lower lobe of the other, were involved, and the oxygen seemed to turn the tide in favor of recovery.

Dr. FRANK W. ROSS, of Chemung County.—I would like to

say one word in regard to bleeding in these cases. I had a case very similar to the one suggested by Dr. Clark, in which the face was blue and the finger-nails were purple. The patient insisted upon being bled. I went away and came back and then bled her until she fainted. I was a little frightened I confess, but somehow felt that she would come out all right. She recovered, and still believes I saved her life by the lancet. There are very few of the physicians in my region who resort to venesection. Parties come to me to be bled every spring—I accommodate them every time and am glad to do it. There is an allusion to the custom, in one of the papers I have heard read upon the therapy of pneumonia, in which it is styled a ceremony of purification. Well, perhaps it is.

DR. ROBERT SELDEN, of Greene County.—I have heard, or seen it stated, that pneumonia was more fatal in the city of New York than anywhere else ; if so be that this is a fact, can any one now present tell.

DR. FERGUSON.—The only statistics I have heard and remember about, are the two hundred and fifty cases of Dr. Loomis, in which the mortality was, I believe, thirty per cent.

DR. W. H. THAYER, of Kings County.—If permitted to revert to the matter of treatment, I may say a few words with reference to a valuable agent. Carbonate of ammonia is a very efficient remedy in all stages of pneumonia. It is the more desirable to bring it to the notice of the Association, since an examination of all the latest treatises on practical medicine fails to discover any allusion to its use. Dr. Napheys, in his work on therapeutics, a collation of American and English authorities, quotes Dr. A. T. H. Waters, of Liverpool, as treating pneumonia with carbonate of ammonia from the outset. This constitutes the only exception to my general statement.

The agent spoken of has long been used as a stimulant in the purulent stage of pneumonia, and in other low conditions ; but its advantage is not alone that of a general stimulant ; and its good effect on the lungs—through which it is eliminated—is not limited to the time when the lung is in the stage of gray hepatization.

For the last fifteen years, at least, it has been my practice to put the patient at once on the carbonate of ammonia, an adult taking from five to ten grains every two hours—which, as Dr.

Rochester has stated, can be easily taken in milk. When I first resorted to this treatment, it was limited to patients seen in the first stage, before hepatization ; with the result that hepatization never took place, and the fine crepitus was gone within sixty hours. Do not think this an extravagant claim.

From using this remedy in the first stage of the malady, I soon discovered that it was a safe and very useful remedy in any stage. It furnishes a needed cardiac stimulant, and begins at once to act on the pulmonary cells, arresting further exudation, if the exudate is not yet solidified, and liquefying it and promoting absorption if hepatization has taken place. Used in the first stage of uncomplicated pneumonia, the lungs give evidence of complete restoration within sixty hours ; and, begun when hepatization is already established, we find an evident impression made on the disease on the second or third day, and convalescence following rapidly.

It is always desirable to begin the treatment with a cathartic, preferably mercurial ; and to follow with all the well-established hygienic measures, which need not be further specified here.

The use of carbonate of ammonia does not exclude the employment of any form of antipyretic treatment, whether by quinine or by tepid or cold baths, when required.

Although the opinion is gaining ground that pneumonia is a specific fever, of which hepatization of the lung is a characteristic lesion, yet there is some testimony that it can be aborted : Dr. Austin Flint, in his "Clinical Medicine," published in 1879, says he has indubitable evidence that the disease can be aborted, and has been aborted by quinine in large doses ; and Dr. A. B. Palmer claims as much for opium.

DR. ———, of ——— County.—As much of late has been spoken and written upon a somewhat new remedy, antipyrin, and as I have understood that Dr. Stockton has given much attention to it, will he kindly give the Association his views upon the subject ?

DR. CHARLES G. STOCKTON, of Erie County.—I have given the subject a little attention during the past year, and I am convinced that the drug is being much abused ; that it is in proper cases a good drug. There seems to be a tendency among some in the use of new drugs—certainly in the use of this one—to use it in a

most dangerous manner. They seem to think that the temperature can be brought down summarily to 96° or 95° . I believe that antipyrin should be given in not larger doses than twenty grains, and that it should be given at long intervals, say of from eight to twelve hours, and then if you have no reduction of the temperature abandon the agent.

DR. FERGUSON.—I listened, last summer, to Dr. Stockton, in his remarks on antipyrin, at Rochester, with a great deal of pleasure and profit. His mastery of therapeutic subjects is such that I know we can place a great deal of confidence in his statements.

Let me ask Dr. Stockton whether, so far, in a careful and judicious use of the drug, he has seen such notable effect upon the circulation as to give him any anxiety in the ordinary dose of twenty grains. I ask more particularly regarding any fears of disaster to the heart.

DR. STOCKTON.—In reply, I would answer decidedly, No. I believe that the effect of antipyrin is no more serious than that of quinine. You do get some heart sedation, but not enough to give any anxiety. In doses of fifteen to twenty grains, repeated in eight to twelve hours, there is no danger whatever.

DR. FERGUSON.—I have used antipyrin very freely since its introduction. I believe it is the one agent we have which can be put in the stomach which is reliable for reducing temperature. My experience is that of Dr. Stockton: that a single dose of twenty grains is often enough for twenty-four hours, but it may be repeated once or twice. In urgent cases I have repeated it every one or two hours, for several times, and so far I have had no unpleasant cardiac symptoms. I can readily see that if the drug were pushed too far it might have a toxic effect; but in doses of twenty grains, repeated at intervals of one or two hours, provided the evidences of reduction of temperature do not begin; its use has been, in my experience, successful, and justified by the results. Forty grains do not always succeed in hyperpyrexia, say where the temperature is as high as 106° .

ADDRESS ON SOME OF THE RELATIONS OF PHYSIOLOGY TO THE PRACTICE OF MEDICINE.

By AUSTIN FLINT, JR., M. D., of New York County.

Read November 18, 1885.

PHYSIOLOGY is the only natural basis of scientific medicine ; even if we use the term medicine in its widest signification, and include in it the practice of surgery, obstetrics, and gynaecology. While therapeutics has always been more or less empirical, the results obtained by the purely experimental exhibition of drugs, when the value of such agents has been established by clinical observation, have nearly always been explained by researches conducted in accordance with the methods most successfully employed in physiological investigations. Illustrations of the principles of harmony years ago, in the musical compositions of Bach and Beethoven, were as purely the results of empirical methods as the treatment of miasmatic fevers with quinine or of syphilis with mercury. As the comparatively recent mathematical investigations of Helmholtz have established a physical basis for the laws of harmony and modulation, so strictly followed by the early classical composers, so the rationale of what was formerly empirical therapeutics becomes positive and definite, as our actual knowledge advances in the direction of the *modus operandi* of medicinal agents and the exact morbid modifications of physiological processes which constitute disease.

Although anatomy and, to a certain extent, animal chemistry have an existence separate and distinct from physiology, physiology itself can not be divorced from a knowledge of the structure, relations, and composition of parts of the body ; al-

though it may be empirically or even accidentally ascertained that a certain drug will cure a certain disease, the rational treatment of diseases, in their various phases and modifications, can not be employed without a knowledge of pathology based upon facts drawn from physiology ; and, while a practitioner of medicine may meet with some success in using prescriptions which are said to be "good" for certain maladies, he rises but little above the avowed "empiric" when he fails to make use of "the aids actually furnished by anatomy, physiology, pathology, and organic chemistry."

The relations of physiology to the practice of medicine, surgery, and obstetrics constitute a subject much too large for discussion within the time to which this address is necessarily limited ; and I shall be forced to content myself with a brief review of a few, only, of the most striking applications of anatomy and physiology to the every-day practice of the physician, leaving out of consideration surgery and obstetrics—a great part of the latter being in itself pure physiology. It may be stated, however, as a general proposition, that the more familiar and trite the examples of the dependence of the pathology and treatment of diseases upon physiological knowledge, the more complete and perfect are they as illustrations of the practical applications of the study of normal functions.

It is difficult to imagine the existence of a rational pathology anterior to the discovery of the circulation of the blood. The method of study illustrated in the classical work of Harvey did not immediately influence physiological research in other directions ; but a review of the important physiological discoveries made since 1628 shows that the experimental method, which led to such brilliant results in the hands of Harvey and which was formulated in the Baconian system of philosophy, has been the only one which has stood the inexorable test of time. The indirect applications of this method to practical medicine are too many to be even enumerated here. They are to be found in both ancient and modern medicine. The physiological facts handed down from Aristotle were ascertained by the experimental method. It was direct observation and experimentation

that enabled Galen to assert that the arteries carry blood instead of air. The correct anatomical description of the heart by Vesalius, and the demonstrations of the valves of the veins by Etienne, Cannanus, Eustachius, Piccolhominus, and Fabricius, prepared the way for the discovery of the circulation by Harvey. The discoveries by Legallois, Prochaska, Magendie, Marshall Hall, Flourens, Bernard, Brown-Séquard, Fritsch and Hitzig, and others, have afforded a positive basis for the pathology of nervous diseases. It is almost unnecessary to recall the observations of Prévost and Dumas on the kidneys, of Beaumont, of our own country, on the gastric juice, of Bernard, on the pancreas, and other physiological discoveries which have, directly or indirectly, so greatly enlarged the boundaries and added to the accuracy of pathological knowledge. An application of methods which have been known to be so useful in physiological study to the investigation of disease is daily producing definite and trustworthy results, although much time elapsed before these methods were generally adopted. The remarkable observations of Louis, which were published early in the second quarter of the present century, have exerted a profound and lasting influence upon medical progress. The so-called numerical method, employed by Louis in the study of phthisis, fevers, and other diseases, was strictly in accordance with the rules of scientific investigation which had done so much for physiology. Physiological discoveries had been made by patient experimentation directed by intelligent preliminary notions, the experimental facts developed always controlling the preconceived theories. Diseased conditions may, indeed, be regarded as experiments made by nature upon the human organism. In the interpretation of these conditions, a variety of disturbing elements, not present in most experiments upon animals, are to be considered. An accurate record of a large number of cases of any given disease, these cases being analyzed with reference to causation, symptoms, duration, post-mortem appearances, the influence of remedies and of peculiar circumstances and idiosyncrasies, affords a truly philosophical basis for correct ideas of pathology, treatment, and prognosis. When we supplement

this with a study of the natural history, or the physiology, of disease, and observe its natural course without therapeutic interference, positive knowledge is limited only by our opportunities for investigation and the accuracy of our instruments and methods of examination.

About the year 1845, Lebert published a work with the apparently contradictory title of pathological physiology (*Physiologie pathologique*). There is indeed a pathological physiology; physiology being the science of nature, and pathological physiology the natural history of disease. When, as a result of the study of the natural history of any given pathological process, we ascertain that the disease is self-limited and has a natural tendency to terminate in recovery within a certain time, we are in a position to judge of the effects of remedies and to contribute intelligently to a favorable result. At the present time, there are many grave diseases in which our therapeutic efforts are almost exclusively in the direction of preventing suffering, ameliorating symptoms, and maintaining the natural forces until the malady shall have run its course; but it is none the less our duty to constantly strive to ascertain the causes of morbid processes and their exact pathology, with the view of aborting or of actually curing diseases. Modern investigations have already made great advances in these directions.

Physicians, in their relation to patients, are looked to for the relief and possible cure of the ailments which they are called upon to treat. As a rule, patients feel but little concern in the methods by which a physician arrives at the special knowledge which makes him useful in each individual case, and they generally look only at results. Assuming that the physician is in possession of the fullest and best information concerning anatomy, animal chemistry, and physiology, the first step in the logical process which results in the application of proper therapeutic measures is the establishment of an accurate diagnosis. I need hardly insist here upon the importance of this as an essential condition of the intelligent treatment of all diseases; and it is not too much to say that a thorough knowledge of anatomy and physiology is the most important of the many requisites of

a skillful diagnostician. One of the best illustrations of this proposition is in the applications of anatomy and physiology to the diagnosis of diseases of the heart.

Without attempting anything like a complete historical review of the progress of our knowledge regarding the physiology of the action of the heart, I may be permitted, perhaps, to call attention to the succession of certain important facts ascertained by anatomical, physiological, and pathological researches.

The errors of the ancient anatomists were pretty thoroughly corrected by Vesalius, whose anatomical descriptions of the heart, including the valves, were quite complete. Notwithstanding this, many years elapsed before Harvey described the blood-currents and demonstrated the uses of the valves. Although Harvey gave a brief description of the sounds of the heart, it was about two hundred years after the discovery of the circulation of the blood that Laennec made an attempt to define their succession and rhythm in the human subject. Laennec, however, had no correct idea of the mechanism of the heart-sounds, and consequently the lack of physiological knowledge still retarded our progress in the diagnosis and pathology of cardiac diseases. A few years later, Hope indicated clearly the relations of certain abnormal heart-sounds to pathological conditions; and researches since his time have rendered the recognition of most of the structural diseases of the heart one of the simplest problems in physical diagnosis. The certainty with which the exact nature of valvular and other lesions of the heart can now be ascertained has been largely the result of close study of the heart-sounds in health.

In physical exploration of the heart, it is easy enough to ascertain the exact situation and character of the apex-beat. If this be displaced in certain directions—leaving out of consideration rare congenital peculiarities, and malpositions due to pleuritic effusions or other extraneous causes which are readily recognizable—the heart must be of abnormal size. If we assume that the base of the heart is fixed, the apex can not be moved downward and to the left without enlargement of the organ. The kind of enlargement, whether by hypertrophy or dilatation

or both, can be measurably determined by the character of the impulse; while the fact of enlargement can be confirmed by determining the extent of the area of cardiac dullness. We have, then, practically before our eyes, an enlarged heart. We know that the object of the ventricular systole is to send the blood from the left side to the system, and from the right side to the lungs. Confining the illustration to the left ventricle, we know that a heart with hypertrophied walls must beat with increased power, must close the auriculo-ventricular valves with abnormal force, and must distend the aorta excessively. This simple modification of the physiological action of the heart must, therefore, exaggerate the apex-beat and increase the intensity of the first sound, and the vigorous reaction of the elastic aortic walls must produce an increased intensity of the second sound. These being the sole physical signs, the condition must be that of simple hypertrophy. If, on the other hand, the apex-beat be indistinct and diffused, and the first and second sounds enfeebled, it is evident that the walls of the ventricles are unable to discharge the contents of the cavities efficiently and normally. The heart is enlarged, but its action is not increased in vigor. The quantity of blood which it receives is increased without a corresponding increase in the force of the heart's action. The condition must be that of dilatation, without a corresponding increase in the thickness of the ventricular walls.

Experience has taught us that the most frequent causes of enlargement of the heart are referable to persistent obstruction or modification of the blood-currents through this organ; and pathological investigations have shown that these obstructions or modifications are to be looked for at the orifices. One thoroughly conversant with the physiological action of the heart and the normal character of the heart-sounds can readily recognize the element of the first sound due to the sudden closure of the curtains of the mitral valve, by applying the stethoscope to the præcordia, a little to the left of the left nipple. If the sound be unaccompanied with any abnormal sound, if there be no murmur immediately preceding the first sound as heard in this situation, and if the element due to the closure of the valve be

perfectly pure, it is absolutely certain that the auriculo-ventricular orifice is normal and that the function of the mitral valve is perfect. We know very well that the first sound, which is synchronous with the ventricular systole, is produced in part by the closure of the mitral valve; if, however, this first sound be attended with a murmur heard with its maximum of intensity directly over the mitral valve, it is almost certain that the valve is insufficient, and that there is regurgitation at the mitral orifice. If we have a murmur immediately preceding the first sound and ceasing abruptly at the beginning of the first sound, we know that the blood at that instant is passing from the auricle through the mitral orifice into the ventricle, and that there must be stenosis or roughness at the auriculo-ventricular opening. I have said, with a reservation, that a mitral systolic murmur indicates mitral regurgitation, for the reason that roughness of the ventricular face of the valve sometimes produces an abnormal sound when no mitral regurgitation exists.

It is absolutely certain that the second sound of the heart is produced exclusively by a sudden closure of the semilunar valves, immediately following the cessation of the ventricular systole. By placing the stethoscope over the aortic orifice, a little to the right of the upper part of the sternum, it is easy to recognize the sound produced by the normal closure of the aortic valves. We figure to ourselves the direction of the blood-currents through the heart and connect them with the action of the organ as indicated by the sounds. During the first sound, the contraction of the ventricles closes the auriculo-ventricular valves, opens the semilunar valves, and the blood is passing from the left ventricle into the aorta. If we hear a murmur directly over the aortic orifice, accompanying the first sound of the heart, it is certain that this opening is constricted or its sides are roughened. If we hear a murmur over the aortic orifice, accompanying the second sound of the heart, it is equally certain that the valves are insufficient and that there is aortic regurgitation.

An accurate knowledge of the physiology of the heart is most useful in enabling us to estimate the danger to life arising from the conditions indicated by physical signs. We know that

the most important function of the left ventricle is to carry on the systemic circulation by means of its regular and efficient contractions. The danger of lesions at the cardiac orifices, or of damage to the valves, is by no means to be measured by the intensity of murmurs. A loud murmur may not be of much immediate importance, and a low, soft murmur, only, may be heard, when the condition of the heart is very serious. The danger to life is indicated by the degree to which the functions of the left ventricle are impaired and are likely to be impaired. When an obstructive or regurgitant lesion is so considerable as to constantly and seriously interfere with the normal blood-currents, the heart becomes progressively dilated and the valvular quality of the sounds is less and less distinct and may be lost. The degree of dilatation is, to a great extent, the measure of the probable impairment of the functions of the heart; and the organ, receiving an abnormally large quantity of blood and being incapable of efficient contractions, may, under temporary conditions which call for unusual vigor of contraction, fail in its action.

I have brought forward thus prominently the illustration of the application of cardiac physiology to practice, for the reason that pathology affords no more striking instance of the importance to the physician of a thorough knowledge of the normal functions. When a student has fully mastered the physiology of the heart, when he has become capable of recognizing and differentiating the heart-sounds and can connect these sounds with the blood-currents, when he understands the mechanism of the production of the heart-sounds and the functions of the different sets of cardiac valves, the recognition of cardiac lesions is simple enough; but, without this physiological knowledge, the pathology of diseases of the heart is to him a sealed book, written in an unknown tongue.

Primary diseases of the digestive system, which come under the care of the physician as cases of indigestion or dyspepsia, constitute a class of disorders which it is not easy to treat intelligently. Civilization involves a large disregard of hygienic laws, both as regards alimentation, judicious exercise, exposure,

rest, and mental work. A man—and such men are few—whose only care in life is to live temperately and rationally, and whose only ambition is to enjoy the luxury of perfect health, is not likely to do much for humanity or to advance knowledge and the general welfare of his kind. Those who are compelled to struggle for existence and comfort, who seek to acquire wealth or distinction, who work and investigate in search of knowledge, or who have grievous burdens, seldom live strictly in accordance with natural laws. Those who have attained their worldly ends and who abandon their occupations in the hope of repose and tranquil happiness for the remainder of their days, without occupation and devoid of mental resources, are frequently the victims of real or imaginary disorders which often assume the form of disturbances of digestion. The history of medicine does not show that the human race has ever been free from dyspepsia, at least in civilized countries; and there is no disease in which purely empirical measures, either recommended by the physician or resulting from the personal experience of the sufferer, are as disappointing and inefficient as in this.

It is not too much to say that our definite knowledge of the physiology of digestion had its origin in the researches of Dr. Beaumont, made in this country between the years 1825 and 1836; and it is a self-evident proposition that physicians can not understand and intelligently treat cases of disorders of digestion without a thorough knowledge of the physiology of the digestive organs. The application of physiology to practice in such cases was so apparent, that one of the first efforts of Dr. Beaumont was to establish the degree of digestibility of different articles of food, which resulted in the table which has been so extensively quoted in works on physiology.

Following the observations of Beaumont (1825 to 1836), we have the researches of Blondlot, Bernard, Lehmann, and a host of others, on stomach-digestion; the investigations of Leuchs, Miahle, and others, on the saliva; the discovery of the functions of the pancreatic juice, in 1848, by Bernard, and later researches on the digestive functions of the bile and the intestinal juice. If the idea of some of the older physiologists, that

the saliva digests starch, the gastric juice the albuminoids, the pancreatic juice, with the aid of the bile and the intestinal juice, the fats, had been verified by exact observations, it would have been easy to locate digestive disturbances and to apply the proper physiological remedies. Unfortunately, however, the normal digestive processes are not so distinct and simple. Saliva is incorporated with the food before it passes into the stomach; and, as the alimentary mass goes gradually and slowly into the small intestine, it carries with it saliva and gastric juice and meets with a mixture of bile and pancreatic juice, being exposed to the action of the intestinal juice as it moves toward the ileo-cæcal valve. The process of digestion, indeed, is excessively complex, and the combined and successive action of the different digestive fluids is not yet thoroughly understood. Still, following our knowledge of the normal processes, the judicious use of peptonizing agents in cases of dyspepsia has often been attended with satisfactory results. The more extensive and accurate our knowledge of the physiology of digestion, the more successful shall we be in treating diseases of the digestive organs. In this class of disorders, practice of medicine must wait on physiology.

It would be more than tedious to enumerate the errors in practice handed down from age to age, which have been corrected by advances in our knowledge of physiology. The exclusive systems of pathology, most of which now possess nothing more than an historical interest, have all yielded to the march of physiological science. The classical notion of the action of mercury on the liver has succumbed to physiological researches. No exact knowledge of the *modus operandi* of remedies through the blood was possible before the discovery of absorption by blood-vessels, made by Magendie, in 1809. The localization of diseases of the encephalon, and our knowledge of the pathology of the host of diseases of the nervous system which we are called upon to treat, are directly dependent upon the physiological observations of Magendie, Charles Bell, Flourens, Mueller, Marshall Hall, Bernard, Brown-Séquard, Louget, Fritsch and Hitzig, Ferrier, and other physiologists of the present century. The memorable discovery of the mechanism of excretion by the kidneys,

made by Prévost and Dumas, in 1821, rendered possible an intelligent pathology of renal diseases, first indicated by Richard Bright, in 1827. I may, perhaps, be permitted to include the description of an excretory function of the liver, in 1862, which throws some light upon the subject of hepatic pathology. Although our knowledge of the pathology of diabetes mellitus is still far from being satisfactory, the only definite information which we possess on this subject is derived from the discovery of the sugar-producing function of the liver, made by Bernard, in 1848.

Within a few years, physicians have given much study to the relations of the temperature of the body to disease. Nearly all medical practitioners now make constant use of the clinical thermometer, and variations in body-temperature are carefully watched and give important information bearing upon diagnosis, prognosis, and the effects of treatment. Various medicinal agents have been found to exert a marked influence upon the heat of the body; and some therapeutists direct their efforts toward bringing the temperature within the normal range of variation by the administration of drugs which are supposed to exert an influence over the heat-producing processes. It is now generally recognized that fever invariably involves an elevation in the temperature of the body, as indicated by the thermometer. Whatever may be the correct views with regard to the propriety of attempting to directly influence fever as a single symptom of disease, it is certain that a return to the normal standard of body-temperature in the essential fevers, when this is not produced by the action of antipyretics, surely indicates a diminished intensity of the morbid processes. Leaving out of the question, for the present, the subject of the causation of fevers, the relations of the physiology of animal heat to the symptom known under the name of fever are most important and interesting.

Our positive knowledge of the physiology of animal heat dates from the experiments of Lavoisier and Laplace, made in 1777. It is now known that the body is kept at a tolerably uniform temperature by the general processes of nutrition, involving largely oxidation, either direct or indirect, of ma-

terials supplied by food, the most active heat-producing articles being compounds of carbon, hydrogen, and oxygen. The condition known as fever involves an exaggeration of the normal heat-producing processes; and, if this condition persist for a certain time, it is attended with loss of body-weight, most marked in the fatty tissues. The fever seems to consume the body itself, especially as there is generally a distaste for food, and the activity of the digestive functions is temporarily impaired. These conditions are observed in nearly all cases of continued fever and of diseases in which there is a constant elevation of heat of the body.

In a paper on Animal Heat, published in the "American Journal of the Medical Sciences," in April, 1879, I ventured to advance certain views relating to the treatment of fevers, based directly upon our knowledge with regard to the physiology of animal heat. The reflections contained in this paper afford another illustration of the relations of physiology to the treatment of disease.

"It is evident that, in normal nutrition by food, the heat of the body must be maintained by changes which take place, either directly in the blood or indirectly in the tissues, in the alimentary matters, and that these changes involve oxidation to a very considerable extent. Under ordinary conditions of nutrition, it is assumed that the food furnishes all the material for maintaining the heat of the body and for the development of force in work, such as the muscular work of respiration and circulation, and general muscular effort. If no food be taken for a certain time, the heat of the body must be maintained, and the work must be accomplished at the expense of the substance of the body itself, and the individual loses weight."

In the instance of a continued fever, unattended with any complicating conditions, the heat of the body is increased, little food is taken, and the functions of digestion and assimilation are more or less impaired. There is an excessive production of heat, and the material for the supply of heat by food is greatly diminished. Under these circumstances, the tissues are themselves consumed, and the body loses weight.

A continued fever is a self-limited disease. Within a certain number of days, the morbid processes run their course. Assuming that the disease be not arrested and that it must continue for a certain definite period, there are two important objects to be attained by treatment: One is to moderate the excessive production of heat, and the other is to so far save the tissues, by artificially supplying heat-producing material, as to preserve them to such an extent that the system shall be in a condition to recuperate when the fever shall have come to an end. How far, now, can a knowledge of physiology aid the physician in the rational treatment of those fevers which clinical experience has shown to be temporary and self-limited?

In studying the physiology of animal heat, it has been found necessary to fix upon some term to express the actual quantity of heat produced. This has been done by calculating the value of what is known as a heat-unit, which is the quantity of heat required to raise the temperature of one pound of water one degree of the Fahrenheit scale. As the result of a number of elaborate experiments made on animals by Senator, and on the human subject by Prof. John C. Draper, it may be assumed that a healthy man produces four heat-units per pound weight of the body, per hour; and a man weighing one hundred and forty pounds would therefore produce 13,440 heat-units in the day. Under perfectly normal conditions, the body-weight being stationary, the matter consumed in the production of this heat must be derived from food. Making deductions for certain products which pass out of the body and do not contribute to the production of heat, the actual heat-value of different articles of food has been calculated. In some experiments made on my own person, in 1879, I ascertained that the total heat-value of food for one day was equal to about 15,000 heat-units, while the calculated production of heat during the same time was about 18,000 heat-units. In these calculations, however, no account was taken of the heat produced by the union of oxygen and hydrogen to form water in the body; but by a series of experiments, which it is not necessary to detail, I succeeded in establishing the fact, to my own satisfaction at least, that water

may be produced in the body by the union of oxygen with hydrogen, which would of course involve a very considerable development of heat. Assuming, now, a person to be in perfect health, neither losing nor gaining in weight, the body produces enough heat to maintain a uniform temperature of about 98° Fahr., and an excess sufficient to supply force for the various animal functions. This heat is probably due to processes of oxidation taking place in the blood and in the tissues, the normal standard of composition of these parts being maintained by the assimilation of food. When an excess of heat is produced under physiological conditions, the temperature of the body is kept at the normal standard by evaporation from the general surface. This is the physiological view of the regulation of the animal heat.

A person in the condition just described is attacked with typhoid fever. The temperature gradually rises until, at the end of five or six days, it has reached 103°. This abnormal production of heat continues, in the great majority of cases, for from ten to twenty days; and within that time defective assimilation of food involves a virtual burning up of parts of the body, there being notable loss of weight. In addition to measures which tend to actually diminish the heat of the body, if it can be assumed that the materials for the production of heat normally are supplied by food, it is certainly logical and rational to endeavor to feed the fever by heat-producing matters ingested, and thus save the tissues. Graves "fed fevers" long before there was established any physiological basis for such a method of treatment. He said that an important object was to prevent death from starvation. In that statement, however, this great physician was but partially correct. In so far as we can supply food to the fever, in the same proportion do we save the tissues of the body. If certain articles of food which are known to have a high heat-value, such as the hydrocarbons and fats, can be digested and assimilated, they must serve in a measure to supply the excessive demand for heat-producing material and aid in husbanding the so-called vital forces.

The introduction of food when it is digested and assimilated

by no means increases the intensity of the fever. On the other hand, as the fever probably depends upon grave modifications in general nutrition, the supply of heat-producing matter from without may actually lower the temperature of the body. There can be no question of the great value of alcohol in certain cases of fever. It sustains the system and reduces the temperature. A knowledge of the physiology of animal heat leads readily to an explanation of the beneficial results so often following this use of alcohol. The heat-value of one ounce of French brandy is equal to about 400 heat-units. Thirty-four ounces of brandy has a heat-value equal to the heat produced by a healthy man in twenty-four hours; and a patient may sometimes take with benefit an ounce, or even more, of brandy every hour for more than a day. It is not illogical to conclude that, in a case of fever with a high temperature and great exhaustion, alcohol may supply the material for the excessive production of heat, and thus preserve a patient until the fever shall have expended its force. In such a case, alcohol may be given in large quantity without producing the slightest evidence of its usual intoxicating effects. Ordinary alcoholic intoxication is due to the presence of alcohol in the blood. In cases of disease in which alcohol, although taken very largely, produces no such effects, the alcohol is undoubtedly consumed at once and remains but a short time in the circulating fluid.

There are conditions in which an abnormally high temperature exists without acute disease. In phthisis pulmonalis, for example, when the disease is progressive there is always more or less elevation of temperature.

It may be interesting to glance at some points in the history of pulmonary phthisis, studied from a purely clinical point of view, and to note how far the treatment which has been found most useful can be made to correspond with our ideas of the physiology of animal heat.

The progress of phthisis is attended with loss of body-weight, disappearance of fat, and an increased temperature. As a rule, when the temperature of the body becomes normal and when there is no loss of weight, the disease is not progressive. The

great object of treatment is to arrest the disease. Although identical phenomena are not observed in all cases and the efficacy of special measures of treatment is not invariable, there are certain measures which are universally recognized as useful.

If the disease be uncomplicated and the tuberculous deposit be confined to the lungs, and if the digestive functions be not seriously impaired, aside from palliative measures directed to the cough, etc., the plan of treatment which experience has shown to be most useful is very simple:

An alimentation as nutritious as possible is our main reliance; and fats, sugar, and starchy matters have been found to be especially useful. The efficacy of cod-liver oil, in the majority of cases, is universally acknowledged; and the benefit derived from the use of this remedy is probably not due in any great measure to the peculiar qualities of this particular oil, except in so far as it is readily digested and is an element of food superadded to an otherwise nutritious diet. While there are exceptions to all rules in the treatment of phthisis, alcohol in some form, used as a remedy and not convivially, is generally beneficial; and, to quote the expression of an authoritative writer on the practice of medicine, "phthisis is one of the diseases which, in certain cases, induce a remarkable tolerance of alcohol."

It is a remarkable fact that, in diabetes mellitus—a disease in which starchy and saccharine elements of food are not assimilated but are discharged in the form of sugar in the urine—the temperature of the body is constantly below the normal standard. One of the most favorable indications of the process of cure in this disease is a return of the temperature to the limits of health. It is fair to assume that the pathological condition which is attended with deficient assimilation of the hydrocarbons involves a corresponding impairment of the heat-producing processes.

By far the most interesting and instructive of the many examples to be found in the history of medical science of the close relations between physiology and the practice of medicine are those illustrating the application of recognized physiological

methods to the study of disease. It is well known to physiologists that most of the great and important discoveries in this branch of medicine have resulted from experiments on living animals. Perhaps the greatest discovery in medicine is that of the protective power of the cow-pox against variola; and its benefits can hardly be overestimated. From time immemorial, inoculation with the virus of small-pox itself had been practiced in China, Arabia, Tartary, Circassia, and other countries, with the general result of protecting the system by producing a mild form of the disease. Early in the eighteenth century, inoculation was introduced into England, chiefly through the efforts of the celebrated Lady Mary Wortley Montagu, who had observed the practice in Constantinople, and the value of the operation soon became established on a scientific basis.

In June, 1798, Jenner published the first edition of his treatise on the cow-pox. It is seldom that a scientific problem is so thoroughly worked out, in all of its details, by a discoverer, as was the case in the instance of the discovery of vaccination. Jenner traced the disease in the cow to a contagion derived from the heels of horses affected with the "grease." He noticed that persons who had been infected with the cow-pox from milking diseased cows did not suffer from small-pox, when exposed. He observed the fact that persons who had passed through small-pox did not usually become affected with cow-pox. He also observed that persons who became diseased from dressing the heels of horses affected with "grease" were usually protected against the contagion of small-pox, although not so certainly as those who had experienced the cow-pox.

In those days, inoculation with the virus of small-pox was a common procedure, and it was noted that persons who had passed through cow-pox were not affected with small-pox, even after repeated actual inoculations with variolous matter. These observations led to a series of experiments, performed after the methods employed in physiological investigations, which established the fact that a trivial disease, running a short course and producing little constitutional disturbance, produced by inoculation from the vaccine pustules of a cow, afforded pro-

tection against what was then regarded as one of the most formidable of diseases.

The "Inquiry" of Jenner, resulting in the most momentous and beneficent discovery in medicine in modern times, was made by following out ideas derived from the observation of certain remarkable coincidences and by experiments made first upon living animals and afterward applied to the human subject.

It is the privilege of our generation to witness the inauguration of a grand revolution in medical science. Following upon the results obtained by a study of the natural history, or the physiology of diseases, the adoption by pathologists of certain of the methods, long employed in physiology, in the investigation of pathological problems is affording information of a positive and definite character hitherto unknown. I refer to recent observations with regard to the pathological relations of micro-organisms.

Twenty years ago (in 1865) Villemin succeeded in producing a disease analogous to pulmonary tuberculosis, by inoculating rabbits and guinea-pigs with tuberculous matter; and the success which attended his experiments on these animals revived at once the old question of the contagiousness of phthisis.

In 1882, Koch made the most remarkable advance in pathology since the discovery of vaccination. By a series of investigations made after an entirely new method—the artificial culture of micro-organisms—he succeeded in isolating the contagious organism of tuberculosis, now known as the bacillus tuberculosis. It is unnecessary to follow out the processes by which the micro-organism characteristic of tuberculous disease was isolated and its pathological relations established. There is no discovery in medicine, within the recollection of the present generation, that has produced so profound an impression; and the readiness with which the conclusions arrived at by Koch have been adopted indicate alike the exact scientific character of the observations on which they rest and the high standard of culture of physicians of the present day. Followed, as it has been, by the demonstration of micro-organisms characteristic of many other constitutional diseases, the discovery of the bacillus

tuberculosis has opened a field of study that is yet in its infancy so far as results are concerned. The pathologist would be bold indeed who would venture to indicate the probable limits of the information to be derived in the near future from investigations of the same character as those made by Koch. The discovery of micro-organisms which produce certain diseases must, in the course of time, lead to a knowledge of measures which will prevent or cure the diseases in question; and even now, the recognition of the bacillus tuberculosis is a positive and important factor in diagnosis.

I have thus ventured to draw from the great domain of pathology and the practice of medicine, a few of the most striking illustrations of the relations of physiology to the positive knowledge which the practical physician daily uses in the diagnosis and treatment of disease. Physiological discoveries have made a scientific system of pathology possible. The greatest discoveries in the history of practical medicine have been made by those methods of investigation which have been found most useful in the study of physiology. One of these, the discovery of vaccination, is characterized as physiological, by its author, in the dedication of the second edition of his book to the king:

“When I first addressed the public on a physiological subject, which I conceived to be of the utmost importance to the future welfare of the human race, I could not presume, in that early stage of the investigation, to lay the result of my inquiries at your Majesty’s feet.”

In the remarkable observations by Koch and his followers, the active principles of contagious matters were isolated, as physiologists have isolated the active principles of the digestive fluids. The methods of study were essentially those which have been most fruitful in results in physiology. Who can say that the processes of culture of micro-organisms, now employed in pathology, may not be useful in physiological research; and that so-called physiological ferments, such as the active principles of the digestive fluids, may not be found to contain minute

organisms upon the multiplication of which the peculiar properties of these substances are dependent!

In the advancement of medical knowledge, physiology and pathology go hand in hand. The ideal physician is profoundly versed in physiology; and the ideal physiologist is no less deeply versed in the practice of medicine.

RECTO-LABIAL AND VULVAR FISTULÆ.

By ISAAC E. TAYLOR, M. D., of New York County.

Read November 18, 1885.

My friend Professor J. W. S. Gouley, whose master spirit of thought and action "called into being" this Association, requested me to present a paper for this meeting. Desirous of giving countenance to the efforts of other gentlemen who are solicitous to advance the interest of this Association and promote its success, small as my efforts may be, I most cheerfully acquiesced in his wish.

Recto-anal fistula is of frequent occurrence.

Recto-vaginal comes next in frequency.

Recto-labial and vulvar fistulæ are infrequent.

I have selected the last of the three different forms of fistulæ, the recto-labial and vulvar, for a few remarks.

The subject is one which merits more attention and consideration than it has received from the profession. The nature of the disease, and the importance of the surgical treatment required to relieve the exceedingly unfortunate and disagreeable sequence of the primary abscess, appear to have been overlooked, or, if not, it must have been considered of very little moment and interest to the medical man, but it is certainly of great importance and consideration to the patient herself. The various diseases arising from the glandular system of the female organs of generation have been and are credited with but slight or no mention by the gynecologist, and appear to be also by only a few surgical authorities, and those more particularly who have devoted their principal attention and experience to the diseases of the rectum.

The subject is one akin to recto-anal fistula, for which affection, as a general rule, a surgical operation is deemed advisable.

Doubts as to the correct method of treating recto-labial or vulvar fistula are as vague and uncertain at the present day, by some of the highest surgical authorities, as in years "gone by," judging as I do from the history of the subject, and from my own experience. In private practice this form of fistula is considered as seldom met with. I find no gynæcologist who has referred to it, although the origin and cause of it are of frequent occurrence, arising as they do most generally from the glands of Bartholinus or Duverney.

As illustrative of the few surgical writers who have promulgated their views and the method of operating for this class of fistulæ, I recognize Copeland, Brodie, Curling and Quain.

Allingham and Van Buren, Mollière and Gosselin make no mention of the difficulty whatever.

Copeland, during his day, was the first to mention the supposed correct surgical treatment for recto-vaginal fistula; none of his cases, however, were of the true recto-labial class.

Sir Benjamin Brodie, who accepted and sustained the treatment recommended by Copeland, says that "during a period of twenty-five years he had seen but two cases, one of those being a direct recto-vaginal, and the other a recto-labial and vulvar."

Curling refers to one case of recto-labial, and Quain also to one.

Reference to the few historical surgical facts of this class of fistulæ is of some moment and interest, as showing the infrequency of the form. I can not believe that other surgeons or medical men have not met with them; but, if they were recognized, no reference by publication has been made, or they have been passed over in silence, with the thought probably that Nature would in time establish a cure.

In 1866 I presented a short paper on the same subject to the New York State Medical Society, and I now offer before this Association some further remarks relating to the locality, of the frequent cause, and the simplicity of the thought which prompted the surgical operation, *apropos* to the nature of these cases,

and the success, as a general rule, attending so unfortunate and disgusting a disease occurring in the female.

Search through the annals of medical science, or the special works on gynæcology, without an exception, and you will be surprised at the silence respecting the Bartholinus glands, or the tonsillar bodies of the vulva, as they are sometimes called, and the diseases which appertain to them, and more especially the consequences of those diseases.

Take a retrospective view from the pages of Morgagni, Couper, and Haller on the anatomy of these glands, and the astonishment is increased. From the works of John Hunter, and, not to enlarge, we find that small abscesses, he considered, took place in these glandular bodies when the patient had blenorrhagia.

M. Robert, in 1840, called the attention of the profession to the glands of the vulva, but it was more especially to the follicular.

To M. Huguier, in 1848, we owe the credit for inviting the attention, in a special and clear manner, to the diseases of these glands. We all know the great influence physiologically these active glandular bodies play in the female economy.

We also know pathologically how frequent abscesses may and do occur in the labial region, through various causes, and that in almost all the cases a favorable termination is looked for, and ensues; every member of this Association has presumably seen several cases.

From the records and testimony I have adduced of some eminent surgical authorities in private practice, the unfortunate sequel I have to consider is believed to be rare. Huguier, nevertheless, in his memoir on the diseases of the secretory glands of the external organs in the female, acknowledges the not infrequent fact of recto-labial or vulvar fistula occurring as a sequence of abscess of these glands of Bartholinus. With all this he has not suggested any operative or surgical treatment for the benefit of the patient.¹

¹ "Mémoire sur les Maladies des Appareils Sécréteurs des Organes Génitaux Externals de la Femme."

Labial or vulvar abscesses are most generally considered as of trivial occurrence. Suppuration in the usual time takes place, the abscess bursts, or may be opened by the attending physician, and that is the end of it, or presumed to be so.

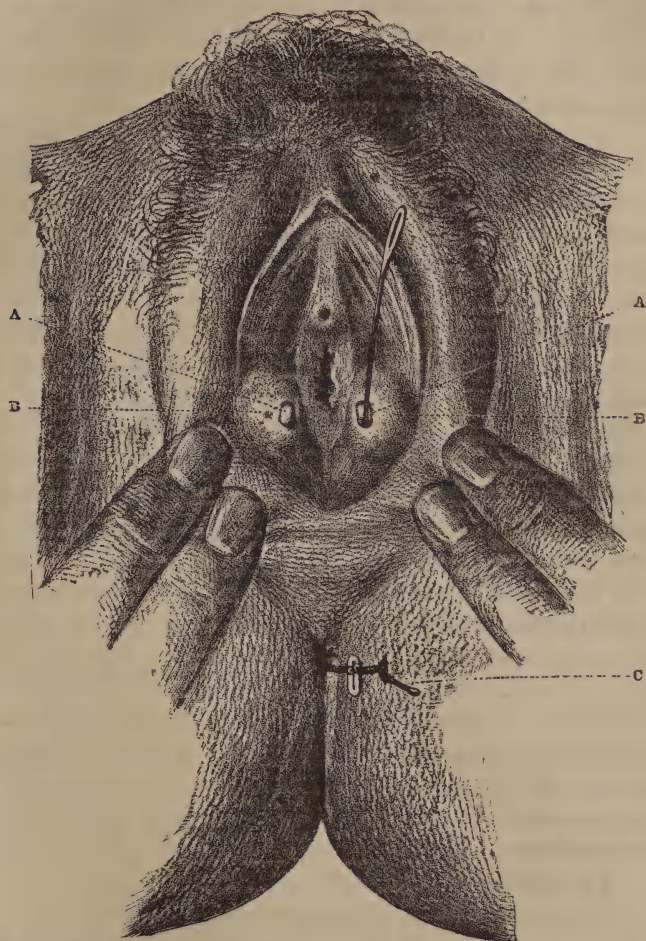


FIG. 1.—A, Probe in the orifice of the gland. B, Gland; inflammation of the duct. C, Ligature, tied and shotted.—(After Huguier.)

Locally these glands, as we are all aware, are situated in the lateral and posterior part of the vagina and vulva, near the

entrance of the vagina, about one third of an inch beyond the hymen and the carunculæ myrtiformes, in the triangular space formed on each side by the union of the rectum and vagina, on which they repose. They are placed between the two superficial and middle layers of the aponeurosis of the perinæum. The minute orifice of the duct of the gland opens at the lateral and inferior part of the vulva, just outside of the hymen and the carunculæ myrtiformes.

In my remarks in this paper I have directed attention solely to the *inflammatory* affections. Under the influence of various causes an inflammatory state of these glands occurs. The inflammation may be confined simply and solely to the excretory duct or the gland itself; eventually the cellular tissue which surrounds the gland becomes implicated. In many cases the abscess originates from the first conjugal approaches, or the act has been repeated many times after short intervals, or from a more direct excitation of the vulva, or from the use of artificial coverings, or the largeness of the male and the smallness of the female organs. Excessive masturbation claims a share in the causes. It is recognized also after confinement. It is seldom the result of extreme violence, or blows, or falls, though they do occur, or it may be through cold.

Labial abscesses, when the areolar tissue is engaged, do not open, as Huguier informs us, on the external face of the labia; they open seldom, or not at all, into the vagina, but on its inner mucous surface, or on the edge of the labia. (See Figs. 1 and 2.) My own experience corroborates this view of Huguier. To account for the *non-opening* of the abscess in the vagina, Huguier says: When the gland is dissected from within outward, we find successively, between the internal face and the vagina, three membranes:

1. The mucous membrane.
2. The proper tissue of the vagina, the fibrous.
3. The expansion which we see on the inferior extremity of the middle layer of the aponeurosis of the perinæum. It is for this reason why the abscess of this organ does not open into the vagina. Now, while the abscess does not open into the vagina,

it does, however, find an opening into the rectum two and a half or three and a half inches high up the gut. (See Figs. 4 and 5.)

To account for this, we should remember that the anterior half of the inferior extremity of the rectum is united, at the posterior part of the vagina, by a cellular tissue on the median line, occupying a space of two and three quarters or three inches in length and one and a half or one and three quarters inches in breadth. It is dense, firm as fibrous structure, and *never fatty*, while outside, or beyond, the tissues become *soft, cellular, and adipose*, and approaches the lateral sides of the vagina, the rectum, and the excavation of the pelvis. We have, however, another form of abscess and, to all appearance, nearly allied to those arising from the gland—the pre-rectal—and to which Velpeau was considered the first to have called attention. They occupy the lower part of the labia, adjoining the rectum and the anus. They have by some been associated, or mistaken for the glandular abscess. This variety of abscess has for its origin other causes than the glandular, arising chiefly from diseases of the anus, though it may have sprung sometimes from the same causes, most generally from cold, or blows, and other outward influences.

Should an early inflammatory stage of these glands not go on to suppuration, but remain passive, they may become cystic, and, what is not very infrequent, continue in this cystic state for some considerable time, eventually passing into suppuration almost imperceptibly to the patient. (See Fig. 2.)

Should this be the result, the tumor presents the same appearance in form and shape as the early stage of inflammation.

The gland assumes an oval form, about the size of a small egg, presenting no redness on the cuticular surface. It is not painful to the touch on examination, and is movable. It is so movable as to be gently pushed upward to the pubes and downward to the perinæum, and sometimes partially up the rectum. With this feature of the swelling or tumor under examination, it is a very difficult matter to form a true estimate of the case. The movability of the tumor may incline one to consider it a prolapsed ovary, having passed down through Broca's canal,

which commences at the pubes and goes down through the whole length of the labia externa; or it might be viewed as an inguinal hernia, or a hydrocele, as it is in the canal of Broca that serous cysts or tumors occur, and continue for a shorter or

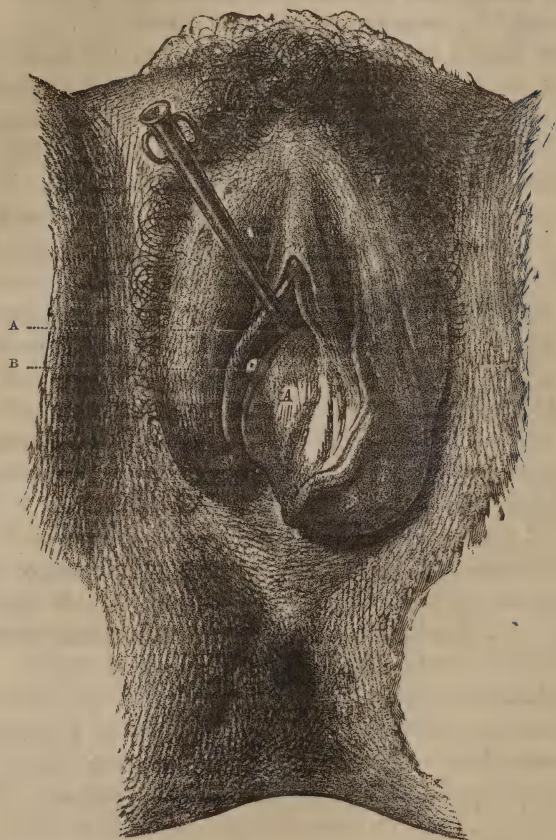


FIG. 2.—A, Catheter in the urethra. B, Gland, cystic.—(After Huguier.)

longer time, and sometimes pass into suppuration. They are a different form of tumor from those which are seen in the canal of Nuck, which seldom or never suppurate. The following case is of some interest, as bearing on this point, the future course and treatment necessary:

Mrs. R. presented herself to me October, 1884, aged twenty-four, single, having a small, egg-shaped swelling or tumor on the right labia. This had existed for several months. On inspection and by manual examination, it was found to be quite movable upward and downward in the labia; gave no uneasiness to the touch; had no redness; was not very firm to the feel. Internal examination gave no pain or uneasiness. No marked translucency of the swelling. I was strongly inclined to the view that it might be a prolapsed ovary existing in Broca's canal. The patient was requested to see me again in two weeks. When she came, she informed me that the swelling had burst, and now *air* was passing through the opening in the labia, and that there was a disagreeable odor sometimes. The history of the patient proved correct. On a minute examination for more than half an hour, the labial orifice was found and the finest silver probe was introduced. After a short time, the rectal opening, as high up the gut as two and a half to three inches, was recognized.



FIG. 3.—ABSCESS OF GLAND. (After Huguier.)

With the brief explanation I have given, we may consider the labio-rectal fistulæ

1. As arising from the gland itself.
2. As implicating the areolar tissue surrounding the gland, and as—
3. The pre-rectal.

From the anatomical conformation of the lower part of the vulva and rectum, as referred to, engaging the perineal space,

we have the recto-labial or vulvar abscess making its way along the lateral sides of the vagina, and finally finding an exit or outlet as high up the rectum as two and a half or three and a half inches. The pre-rectal finds an exit just above the internal sphincter, and which, as a general rule, it does, or between the internal and external sphincters. (See Fig. 5.) It is as customary (so far as my experience goes) for the recto-labial opening to be found high up as it is natural for the pre-rectal to be low down in the gut.

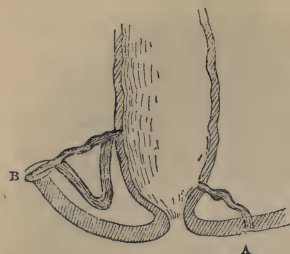


FIG. 4.—A, Anal fistula. B, Labio-rectal fistula.

Recognizing this important fact, it makes the attempt to find the rectal opening very easy and distinct. The sinus arising from the gland itself, or when the areolar tissue surrounding the gland becomes involved, may be almost direct. Most generally it has a long, circuitous course. It passes down from the

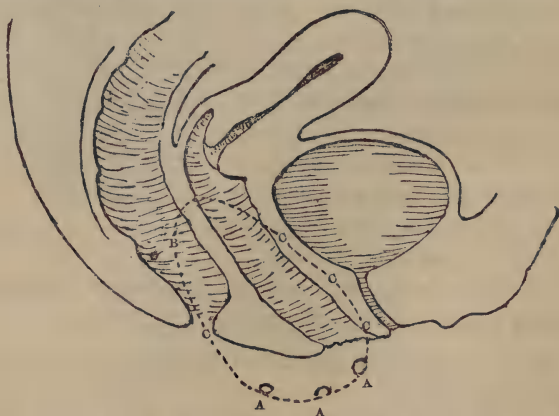


FIG. 5.—A, Labial orifices of abscess. B, Rectal opening of abscess. C, Dotted line of abscess.

external or labial opening to the perineal space, then travels up beside the rectum, and opens either laterally or posteriorly into the gut, at the height referred to—two and a half or three and a half inches—and ranges from three to four inches in length.

The labial or vulvar orifice of the sinus may be where the orifice of the duct of the gland is located, or it may be midway, and in some instances as high as the urethra. (See Fig. 5.) The size of the orifice in the labia is generally very small, and so minute in some cases as to require from one half to three quarters of an hour to discover it, and then the orifice will only admit the smallest silver wire to be introduced. At times a valvular opening exists. It is seldom the labial or rectal openings are as large as a small split pea, and a large silver probe could be inserted easily.

The pathognomonic symptoms of air or gas or very liquid faecal matter can not be mistaken, as they prove that a fistulous communication exists between the rectum and the labia.

The fact that air has passed through the labia or vulva, even if fluid faeces have not (the taint will establish the fact), demands an investigation to corroborate the symptoms.

I have no doubt that this class of fistula has existed where it was supposed that the case was one of physometra or air from the vagina, which we sometimes meet with, and, should an investigation be made, it would be found to be correct.

When I have asked the question of some of my gynæcological as well as surgical friends, How they would treat such a case as recto-labial or vulvar fistula—the labial orifice of the sinus being midway on the labia, or near the urethra, or as low as the fourchette, and the rectal opening as high as two and a half or three and a half inches—the reply has been :

By Some.—Divide the intervening structures, the vagina and perinæum, and then close the divided parts by suture, the same as for lacerated perinæum, completely through the sphincter ani.

By Others.—Place the patient in the genu-pectoral position, use Sims's speculum, denude the edges of the rectal opening, and close by suture.

By Others again.—Divide the whole sphincter ani, internal and external muscles on both sides, as for fistula in ano.

It must be apparent that neither of these methods could, on mature reflection, be entertained, or, if they were, could be successful.

The *first opinion* militates against the usually accepted and sustained views of the best surgical authorities.

The *second* view of the case, respecting denuding the edges of the rectal opening and then closing it by suture, is purely theoretical, and I am not aware that such an operation could or would be attempted.

The *last*—complete division of the sphincter ani, through both sphincters—might be, but the hæmorrhage would be so great as to preclude it entirely.

In my remarks on this subject I desire to exclude the direct recto-vaginal fistulæ consequent on traumatic causes, whatever they may be.

I make exception, however, only for those cases where a minute labial opening exists near the fourchette, and where it is possible a favorable result might or would be expected, but avoiding too free and deep division of the parts.

Respecting the *cause* producing these recto-vaginal and labial abscesses, Sir Benjamin Brodie, nevertheless, entertained an entirely different opinion. I find he is the principal exponent, more than any other whom I have consulted, who has referred to them. The opinion as to the cause, which he held at that time, was very indefinite, and he evidently had no just comprehensive view of the nature, the true and correct cause of the class of abscesses which take place on the labia, nor in the region of these parts, nor had other surgeons, from the pathological view of the abscess then held, until M. Huguier, in his inestimable monograph referred to, demonstrated the true cause so clearly, as well as the unfortunate results arising therefrom, as a sterco-vulvar or labial fistula.

Brodie, acknowledging this form of recto-labial fistula, remarks: "Now there is another form of fistula that requires very special notice. I can not do better than to mention the following case." I quote this case, for it casts considerable light on the views that were held at that time on this affection, and the method of operation resorted to:

There was a middle-aged lady who had an abscess formed in front of the rectum. I imagined it arose from *ulceration of the*

gut. The abscess burst close by the posterior margin of the vagina, and appeared just like a common fistula. She consulted a surgeon, who inadvertently treated it as such and laid it open into the gut.

But what was the consequence? He divided both the sphincters ani and vagina, and the wound never healed perfectly, and all the rest of her life was miserable.

He says: "I saw this case in 1846, and it was a lesson to me ever afterward." Brodie, remarking on the cause of this case, says: "It is not very often that abscesses of the rectum *do burst* in this situation. I have only seen a few instances of it." Brodie considered that the origin of the abscess was "from an *ulcer* of the mucous membrane of the bowel, extending through the mucous membrane into the cellular tissue external to the intestine." But, still further on, he says: "It is impossible to understand why suppuration should take place in the vicinity of the rectum more than in any other part of the body, and why the cellular membrane *there* should suppurate more than the cellular membrane elsewhere." I have only had a few examples of it. Now how is such a case to be treated? He relates the following:

A lady consulted me with a fistula, communicating with the rectum in front, and opening externally. I made a free division of the sphincter muscle on both sides, so as to set it completely at liberty. I dressed the edges of the muscular sphincter, and it was a good while before it regained its complete usefulness. Five months afterward it was just healing.

He says: "I was led to adopt this method of operating, as it was the one pursued by Copeland." Curling met with, in 1851, a case of a young married lady, who had not only a fistula which opened by the side of the rectum, but another within the vagina, and a *third* opened in the lower part of the labia. An operation was suggested, but declined. Curling, remarking on this case respecting the operation necessary, says: "That when both the sphincter ani muscles are divided, it is found that the patient loses the power of retaining the fæces." It is unneces-

sary to select further quotations from any other writers on this important point of surgical treatment, in cases so closely allied to the class I have under consideration, as they are sufficient to illustrate some of the objects I have in view, the cause and the treatment from such eminent surgeons.

In *marked contrast* with these erroneous views as to the cause as well as the proper treatment of abscesses of the vulva and labia and the sequences attending them sometimes, and as bearing on the method of surgical treatment, I refer to the views and opinions of Professor J. Rhea Barton, of Philadelphia, published in the "American Journal of Medical Sciences," as far back as June, 1839. The title of Barton's paper was "A Recto-vaginal Fistula Cured," but it was a labial fistula, as he remarks elsewhere. It should have been called a recto-labial fistula.

At this point I can only express my surprise at the omission or the non-recognition of his views and opinions, and the operation he performed, as it antedates Brodie's, Curling's, and Quain's, as it merited attention and consideration from the simplicity of the *idea*, which prompted an operation which resulted so favorably for his patient after many years of suffering, and instituted the true and correct course of treatment. It is an operation I have pursued since 1844 in more than forty cases, and I therefore have no hesitation in advocating its claims for recognition and trial should any of you meet with cases of a like nature. It was the only and first case of Barton's—now over forty-six years ago—and, as it may not have been seen by only a few or possibly none of the members present, I trust I shall be excused for introducing it in all of its details, as the subject is so important and interesting:

In June, 1835, an unmarried lady, aged twenty-two, experienced all the symptoms of an acute abscess in the region of the rectum and vagina. It formed and broke on one side and was lanced on the other. After a copious discharge of its contents, one of the openings healed, while the other became fistulous and remained so for four years, resisting all treatment—iodine, caustic, excisions, injections, tents, and setons. She came to Philadelphia

from Baltimore. The *fistula* was found commencing about three fourths of an inch within the labia of the right side, then passing by a very *irregular* course up the pelvis, and inclining to the rectum, into which cavity it finally opened about three and a half to four inches from its inferior aperture in the vagina. Through the sinus there issued *fluids* in sufficient quantity to keep the genitals continuously moist. Flatus also at times found its way through this channel.

It was apparent that this sinus could not be included in a seton, and *ulcerated through*, nor be laid open as is usually done in the common fistula in anal cases, without destroying the perinæum, and laying these *two great* cavities into one, thereby causing a more unhappy state of the parts than had formerly existed. The duty of the surgeon, therefore, was very clear: either to consign the patient to a continuance of her loathsome complaint, or to adapt an operation to her *peculiar* case. A fine tent was for a *few days* introduced to dilate the sinus, and to render its course less tortuous. A seton was then inserted into the sinus, with an eyed probe through its whole extent, until it had penetrated the rectum by the orifice in that cavity three and a half inches up. It was then brought down through the rectum and anus. The two ends were then loosely tied together, merely for security against its slipping out. After a few days the *end* of the seton passing out of the vagina was put through the eye of a probe which was previously crooked at the end. The probe was then inserted into the orifice of the labia, then its point directed toward the perinæum, just external to the sphincter ani muscle. Here a small but deep incision was made, and the probe passed through it, bringing along with it the end of the seton, which had doubled on itself. The seton now descended through the new channel which was made fast. The ends were now tied, in which were included the portions between the outer surface of the sphincter, and twisted tighter and tighter from time to time, in order to cause its ulcerating through the included parts, as we do in common fistula in ano.

The end which I desired to accomplish by *my operation* was to establish a freer and more direct passage for the escape of the fluids by the rectum than that by the vagina; the sinus opening into this cavity would heal *sua sponte* and become permanently

obliterated, and which proved successful. One year after Dr. Barton was informed that the patient had continued perfectly well.

The question which Brodie asked, "How is this variety of fistulæ, the recto-labial, to be treated?" is, at the present day, just where Sir Benjamin proposed it in 1845, forty years ago. Brodie advocated the operation of Copeland. Copeland's operation was, as I have stated, for direct recto-vaginal fistula, consequent on tedious labors or on traumatic causes, which would at the present day be treated the same as for vesico-vaginal fistula. Brodie's case, which he operated on for recto-labial fistula, took five months before it was cured.

When Curling, in 1851, and Quain, in 1854, issued their surgical works on rectal diseases, it was twelve to fourteen years after Barton's case was published, but no mention or reference was made to Barton's view of this kind of fistula, and the method of operating. Possibly because they may not have seen it, or, if they had, they had passed it by as of no moment and little value.

Many times in medical or surgical practice an original idea respecting a new operation of a surgical nature will, from the simplicity of the suggestion, without much reflection on the part of the reader on the subject, be set aside or rejected as unworthy of consideration, and that too without giving any attention, and without any experience in relation to the subject.

The class of cases under advisement are in close alliance in appearance to the ordinary fistula in ano, and for this reason it is presumed they would necessitate the same kind of operation.

They are nevertheless entirely different, and require a more conservative surgical treatment by an operation unattended with any unfavorable contingency, consequent on an operation where the rectal opening is as high up the gut as two inches and a half to three inches and a half, and the external on the labia mid-way, or near the urethra, although that is only occasionally so.

Allingham says: "In operating on women suffering from fistula, and when it is especially near the perinæum, cut as little as possible, for anything like the free division is apt to lead to

incontinence of fæces, or, at all events, in such patient's loss of power in the sphincter as to prevent retaining flatus, etc. It behooves us, therefore, to consider how much we dare do without danger of damaging or destroying the power of the muscles at the outer end of the rectum. In the complaints of this nature, as the division of the parts, where the internal opening is *high* up the gut, it would not be safe."

Brodie affirms: "Suppose the fistula is high up by the side of the rectum, I used to imagine it was necessary to lay open the whole sinus into the rectum, but it is a frightful operation to lay open so long a sinus."

Quain: "Such an operation is dangerous on account of the hæmorrhage which follows any long sinus in the rectum."

Curling: "When the opening is in the rectum more than *two inches and a half* above the external sphincter, the division can not be made without risk of hæmorrhage, and death has happened after the division of a rectal fistula high up, and I have seen one case of it and know of two others."

I can bear personal testimony to the truthfulness of this remark. A patient of Dr. A. H. Stevens died a few hours after the operation, and two others also met a like fate a week after operations—all from loss of blood.

I have intentionally selected these few remarks from these distinguished authorities as useful and pat to the object I have in view, opinions which I believe nearly all present may coincide with, and no doubt sustain by their own experience.

Mr. Luke, of the London Hospital, is thought to have been the first to recommend, when the rectal opening was high up the gut, to resort to the ligature, as I presume you are cognizant of.

That was in 1845; Barton's case, however, was operated on six years before, as the case was published in 1839; Barton's case being far more interesting, instructive, unique, and rare at that time.

By way of exclusion, therefore, the unpleasant and unfavorable results from the use of the scalpel for ordinary fistula in ano, and where the rectal opening of the sinus is two inches and

a half or three inches and a half as in recto-labial fistula high up, the ligature must naturally commend itself. An old but bold French surgeon considered it was, and should be resorted to by the *timid* practitioner only. Pott, an English surgeon, says: "The terror which a cutting instrument carries with it, the fear of a flight of blood from some considerable vessels, produced the coarse and unhandy method of ligature."

Barton used the silk as a ligature, and this was the material I first tried. The silver wire I also resorted to. The objections to these substances since the important discovery of the elastic ligature are many, and they should not be given the preference over the other articles, since they require almost daily visits for purposes of the tightening or twisting when they are cutting their way through the structure embraced in the ligature. In my last two cases the elastic ligature was selected. Holthouse, of London, was, I believe, the first to use it for fistula in ano. It is very strongly advocated by Professor Dittel, of Vienna. Approved highly by Courty, of Montpelier, and finds in Allingham an experienced approver.

The advantages in those cases of fistula in ano requiring the use of the ligature in preference to the scalpel are very valuable, and especially so in the recto-labial or vulvar fistula.

Very little pain is experienced from its application. In fact almost none at all.

The pressure of the thread on the structures to be cut through may not be always the same during the progress of cutting its way through, for the pressure becomes less as the space to be divided is diminished on account of the strength and size of the ligature.

In some cases the patient, as Courty says, has gone on with his business after the application, and physicians who have been operated upon have pursued the rounds of their professional duties without any trouble or unpleasant inconvenience.

The *time* occupied for the ligature to accomplish its work is from three to six days, according to the smallness of the structures to be divided, their firmness and thickness. Sometimes it has taken from seven to eight days. The elastic thread may

sometimes cease its pressure and require the trifling remnant of the structure to be divided or simply nicked to free the ligature.

Now *how* shall the elastic ligature be introduced in this class of fistulæ? Allingham has suggested an instrument for this purpose, in cases of fistula in ano. The instrument of Allingham can not be available in recto-labial fistula. It is too large at the extremity, and its size, to be inserted through such narrow fistulous tracks as exist in these fistulæ.

I have given the preference to a small, slight, ductile silver probe instead, and I have not found any difficulty, though it requires a little time to accomplish its task. There are two different ways of passing the ligature:

The first is that which Barton adopted, and which may be considered by some as the best, and to appearance the easiest and most simple. Recognizing the locality of the rectal or internal opening by introducing the silver probe of moderate size and proper length, with the eye of the probe threaded with the elastic ligature, into the labial or vulvar orifice, direct the probe to the internal or rectal orifice of the sinus, then with the left forefinger introduced into the rectum, having felt the probe, bend it and bring it down through the rectum and out of the anus. Withdraw the probe, having left one end of the ligature out of the anus and the other out of the labial orifice, remove the probe, then introduce it again into the labial opening, pass it down along the perinæum till it reaches just outside of the sphincter ani, low down, then cut on the end of the probe and draw the ligature through the new channel with the end of the ligature which was at the labial orifice left after the first introduction in the labia. The ligature is then tied, shotted and clamped, and the ends clipped off, and the patient returned to the bed. (See Fig. 1.)

The *second* method, and the one I have most usually followed:

The usual surgical silver probe is introduced into the labial orifice, pressed down to the lower part just outside of the sphincter ani, the end is then cut upon, then withdrawn, and a more

slender, ductile one substituted, and passed up to the rectal opening through the sinus, having the eye threaded with the ligature; the finger is introduced into the rectum, recognizes the probe; this is curved, and gradually and gently drawn



FIG. 6.—A, End of anal ligature. B, End of labial ligature. C, Perineal ligature, as passed.

through the rectum and anus. The two ends are then tied, shot, and clamped, to make it more secure. When the external artificial opening is made, it is apparent that we now have simply an ordinary fistula in ano, with an internal or rectal orifice high up the gut.

The question has often been put to me, What do you do with the labial orifice, as you now have three openings? The fact must be self-evident: it takes care of itself. In a few days, or at most two weeks, the sinus or fistulous opening will be perfectly closed, for just as soon as the rectal opening is united and the ulceration or sinus gradually healing up, there can no more air or fluid fæces enter and pass through the sinuous tract out of the labial orifice.

Nothing more is requisite to be done after the operation than to have either warm or cool applications, agreeably to the sensations of the patient, made with simple water, several times

during the day. Should the patient require an anodyne, it can be given, but it is not always necessary. In a few days the elastic ligature will have cut its way through the intervening structure involved in the ligature.

Possibly, gentlemen, I have been more prolix than the subject I have invited your attention to called for. I am aware I have entered into more detail on some points than might be deemed necessary. I should not have done so if my experience had not informed me that the recognition of such a clear, comprehensive, and simple idea of Professor Barton, by the conversion of a recto-labial or vulvar fistula into a common fistula in ano, and the success attending the treatment of so rare and unfortunate and loathsome fistula in the female, by the use of the ligature instead of the knife, which would carry with it, a most lamentable and distressing sequence, for many years, if not for a lifetime.

I have presented this important subject afresh to you, since my last paper in 1866. I have done so in justice, as I conceive, and as a tribute of great respect to the memory of one of my first teachers when I entered as a student in the medical profession, though having seen many more cases than he had, as he had had but a single instance of the affection. My experience for over forty years ratifies in my own mind the correctness of his original idea, and confirms the great utility and benefit it creates for the suffering patient. It is due to his memory, for he was one of the most eminent surgeons during his day—conservative in his views respecting his surgical cases—brilliant in his operations, and exceedingly successful in the result of them.

A PRESENTATION AND REMARKS.

DR. TAYLOR: Mr. President, if you will permit me, I have a gift to the Association from Dr. Samuel W. Francis, of Newport. It is quite a unique obstetrical instrument. I call it the obstetrical abtractor. Also this skull, which illustrates very finely the over-lapping of the parietal bones, I give on my account. I suppose the diminution to be at least half an inch. I think both of them, not only the head but the instrument, will be of some interest to all of you. Whose instrument this is I do not know. The head is certainly very valuable, because you may not be able to match such a head out of four or five hundred cases.

DR. FERGUSON: I think, Mr. Chairman, the highest compliment has been paid to Professor Taylor's paper this afternoon by the fact that there is hesitation in remarks upon it. The subject has been so clearly presented, is so thorough in all its details, and the statements cover the ground so completely, and are so evidently the truth in all particulars, that I do not see that there is any opportunity for discussing it.

So far as the instrument is concerned, it is certainly a novel one, and the question arises at once, Why has not it been thought of before and been more frequently put into use?

I wish to offer a resolution of thanks to Dr. Samuel W. Francis, of Newport, R. I., for the peculiar instrument shown by Dr. Taylor. Also to Dr. Taylor for the skull accompanying the instrument.

The resolution was seconded and carried unanimously.

RECURRING LUXATIONS.

By EDWARD M. MOORE, M. D., of Monroe County.

Read November 17, 1885.

THE recurrence of dislocations is a topic with which in a general sense the profession is familiar, and certain rules of practice have been laid down to prevent immediate as well as subsequent relaxation. For instance, the necessity of quiet, so as to induce a close union of the edges of the rents in the capsule and ligaments, and the adoption of certain positions favorable to this result, have been insisted upon from time immemorial. There are, however, a few procedures that have been somewhat neglected, and some, in my opinion, are erroneous, while the attention of the profession has not been sufficiently, if at all, directed to cases of bad results from the failure to observe proper precautions. The literature is meager, and in some directions, I am inclined to believe, is silent where the importance of the matter is great.

In making some experiments with reference to the pathology of luxations, I became convinced that some causes of recurrence had been overlooked, although the practical direction to prevent it had it been properly devised. In others, I believe the device itself to be at fault. The time allowed this paper necessitates merely a cursory statement of that which I have to say ; but perhaps that is all that would be profitable.

That every one knows that luxations are apt to recur, I assume to be true. Also, that they do so not only as the result of the force similar to that which produced the original one at remote intervals of time, but also that they recur at once, the moment after reduction ; indeed, they drop out of place as it

were without violence, and as the consequence of different forces. This tendency to recurrence is, of course, a variable condition; some joints rarely suffer, even after the greatest carelessness, while others are retained only by great effort, and even that often failing. I propose to speak mostly of those cases where the recurrence is immediate; in other words, that which occurs before repair of the capsule, say, within a few days, hours, or minutes.

Taking the joints *seriatim*, I shall speak first of the lower jaw. While it is well known that subsequent luxations of this joint occur, the pain and soreness are apt to prevent the extraordinary tension of the muscles which would produce it. That the patient, with the jaw controlled by a bandage, should for a week or ten days live on liquid food, and, further, in speaking as well as feeding, should keep his jaw quiet, are parts of a method well understood by the surgeon and generally disregarded by those most interested. But, as just observed, the condition enforcing some quiet, immediate relaxation must be very rare, and therefore requires no special mention. In these cases the force similar to the one that could produce the injury primarily is very unlikely to happen.

This statement, however, can not be made concerning the dislocations of the clavicle at either end. These displacements, although they are sometimes difficult and perhaps impossible of reduction, are seldom to be so classed. By seizing the arms just below the axilla and drawing them backward, the clavicle usually comes into its place after luxation. But, as every surgeon knows, the small and flat surface at both ends affords no passive support to procure retention, and the forces to relaxate the bones are constant and powerful. Both the muscles and gravity bring about this result.

The direction to use the apparatus that is usually employed by the practitioner for the relief of fracture of the clavicle fails of its purpose; but my experience, or rather my collection of the experience of others added to my own, proves beyond doubt that the retention of these luxations after reduction will be almost absolutely certain provided we succeed in holding the elbow

backward with the hand against the side. This I have done by the use of adhesive plasters, but I find the bandage which I have called the "*figure eight from the elbow*" efficient and more pleasant. I have never used plaster of Paris, but have no doubt of its efficiency. The ordinary clavicle apparatus with the axillary pad will never allow the space between the acromion and the sternum to be of the full length of the clavicle. It is necessary to carry the scapula nearer the spine than the normal position, and if this be done in consequence of the rotundity of the thorax, the acromion can be thrown out to a distance from the sternum even greater than the length of the clavicle. But this circumstance alone will not bring the clavicle in place, much less keep it there; it merely opens out the space necessary for the adjustment of the bone. If the arm be swung back, with the head of the humerus as the center of motion, it will stretch the clavicular fibers of the pectoral muscle and the clavicular fibers of the deltoid. The muscles antagonistic to these are the clavicular fibers of the sterno-cleido-mastoid and the trapezius. If the lower muscles be made tense, the clavicle will accordingly be held in place with almost absolute certainty by the power they exert in drawing downward.

The luxations of the shoulder into the axilla are so common that almost every surgeon of experience has seen the condition of immediate luxation. I have had the head of the humerus drop out as fast as it was returned, and without any complication of fracture. I have also had the recurrence produced even when I had carefully padded the axilla and bound the arm down, as I thought, sufficiently. This occurred from uneasy motion during sleep. The ordinary method of padding the axilla so as to use the thorax as a splint, while the arm is bound to the chest, seems to me to be amply secure, but the patient should not be lost sight of for ten days.

But the variety of the luxation known as that "on the dorsum scapulæ" has probably not had brought to view a danger of recurring luxation, which I believe is very great in every case of this kind. I know no report of any case. However, this does not surprise me, considering the rarity of the luxation, and

its very meager literature. I believe this luxation to be produced by a twist with the arm rotated inward at the moment the fall on the hand takes place, and also without any other cause than this twist.

A young but very competent surgeon of my acquaintance reduced a dislocation of the kind under consideration, and resorted to the plan usually adopted, of bandaging the arm to the side and padding the axilla according to the common custom. The patient, however, complained of pain, which the surgeon was convinced arose from the violence of the injury done to the parts, now still swollen after the reduction, and the impression rested on his mind that the rectification had remained, for he had at the time of the operation put the limb through all the motions that are regarded as tests of restoration. That reduction was accomplished there can be no doubt; the subsequent freedom of motion was sufficient evidence of this. But at the end of a month the swelling had disappeared, and it became plain that the head of the bone was after all on the dorsum scapulæ. At this juncture the case came under my observation. I reduced it easily by manipulation, using as a lever to rotate the arm outward, the method of carrying the arm at right angles with the body and flexing the forearm on the arm. As this was a recurrent luxation, I felt the great necessity of retaining it in place by firm bandaging, and prepared to put the forearm horizontally against the body with the axilla well padded to prevent any motion. As I brought to the body the forearm, which was still in my hand, and the arm to the side, I felt a peculiar jerk-like motion, and was soon convinced that the head of the bone had left the socket and gone back. Embracing the opportunity for experiment, I replaced the bone, but when the forearm was brought to about an inch from the person it again slipped out. After a very careful examination of the man's description of the circumstances of the accident (a matter of much obscurity), I concluded that the luxation was produced by a twist of the arm inward. It appeared that, during an angry scuffle, when the muscles were in the highest state of tension, a friend, in his endeavor to separate the combatants, seized the forearm of the

patient and drew it backward, rotating the arm inward. The man was conscious, even under these unfavorable conditions for observation, of some hurt at the shoulder at this moment. In this case, where the recurrence of the luxation could be so easily brought about, it became a matter for reflection to determine the proper position to maintain as a provision for the future. A friend who has reduced many luxations of the shoulder in the axilla, and who uses my bandage for the treatment of fractures and dislocations of the clavicle, and which, for convenience of description, I have named the "*figure eight from the elbow*," asseverates that it never fails to retain the head in its place. This, however, had never been my practice, but it seemed to me that the plan of carrying the elbow back would push the head forward, and consequently counteract the tendency to fall back on the dorsum. I may add, that by this procedure I have been rewarded with entire success. But to bring the whole subject sharply to your attention, permit me to rehearse my experiments in detail.

EXPERIMENTS ON THE ELBOW.

Experiment First.—Muscles from the arm and forearm removed and ligaments left in place. The humerus being firmly held by staples to a strong block of wood, a lever was applied to the hand so as to bring pressure to bear in the line of the radius and ulna, with these bones at an angle of one hundred and thirty-five degrees to the humerus. The lever was a strong bar of iron, four feet long, while the distance from the attachment to the bone to the fulcrum was six inches. The pressure was maintained very nearly at this angle, though the swinging of the lever altered it a little, slightly increasing the flexion as the pressure was increased. Notwithstanding the use of this great power, with the added strength of a powerful young man, the joint remained in its position until the head of the radius began to crumble, when a slight side movement caused the anterior ligament to suddenly yield, and both bones were carried backward. The attachment of the anterior ligament gave way at its insertion in the coronoid process; a small scale of bone followed the capsule, but the point of the coronoid process, or as I may say the process proper, was

not carried away, though a line of fracture was to be observed running horizontally through the cartilage, but not displacing or running through the coronoid process. In this case the radius seemed to have left its proper place first.

Experiment Second.—The opposite arm of the same subject was denuded of its muscles, and the humerus secured in the same position, with a similar arrangement of the lever and hand. The same force was applied, and when a slight bearing upon the ulnar side was produced, the ulna left its place first and the anterior ligament suddenly gave way, carrying a scale of bone below the point of the coronoid process, and the dislocation was complete. In this case there was no fracture of the coronoid process at all; it remained entire. Neither the lateral ligaments nor the posterior portions of the capsules were injured. In both of these cases, by carrying the radius and ulna, which of course represent the forearm, down to the angle of one hundred and thirty-five degrees, it was found that the articular surfaces would drop away from each other; but when it was carried up to the right angle, the joint was obviously held in its place by the tension of the lateral ligaments and the posterior capsule. Here was an excellent demonstration of the facility of recurring luxation when the arm is placed at this angle upon the pillow, and also of the complete assurance of its retention when kept at the right angle.

Experiment Third.—The elbow was denuded of the integument to a distance of three inches above and below for the purpose of keeping the tissues under observation during the progress of the experiment. The arm was held upon the table, the elbow being carried just over the edge. The forearm was now used as a lever, and the force was applied so as to put a strain upon the joint in a direct line backward. As in the other experiments, it was found that the anterior ligaments yielded so far as to allow the forearm to be carried backward, and that also a scale of bone was carried away by the ligament, but the tip of the coronoid remained uninjured.

A case that resulted in a protracted litigation seemed to be governed by the condition demonstrated by this experiment. A surgeon of ample experience was called to see a dislocation of both bones backward; he simply followed Sir Astley

Cooper's method of placing the knee against the lower and inner side of the humerus and drawing on the forearm, held at right angles to the arm. The characteristic snap was produced, and the symmetry of the arm was at once restored. He had no doubt, and I certainly have none, that the reduction of the dislocation was accomplished. The patient, however, injured in other ways, was forced to take the recumbent posture, and the limb was placed on a pillow with no special restraint. The surgeon intended to place the arm in its resting place with the forearm at right angles to it, and did undoubtedly do so; but the balance of power between the triceps and biceps was not established at the right angle, that being one of a hundred and thirty-five degrees. The least motion being apt to result in some alteration of the position of the arm, would produce a constant tendency to widen the angle.

At the trial there were presented two cases where the elbow was believed by the surgeons to have been reduced and luxation recurred. One of these resembled the case described above, which after reduction was placed on a pillow. The next morning the surgeon recognized the fact that the luxation had recurred; he again reduced it and dressed the limb with an angular splint, which retained the parts in apposition by keeping the forearm at right angles with the arm. The second case was that of a man who was intoxicated, and after reduction refused any retention apparatus whatever.

I made a direct experiment in one case after reduction, and before the patient had recovered from his narcosis. I shall relate it. The forearm, after reduction, was carried up at an acute angle with the arm so that the hand reached the neck. This was done by way of assurance to myself that there could be no mistake about the reduction. The arm being held up, free from contact with the bed, the forearm was gradually carried down till it reached an angle of one hundred and thirty-five degrees, when it at once became dislocated, the olecranon swinging back into its prominent position. It was again restored, and remained in place when the forearm was held at right angles with the arm.

A case is reported by Hamilton, of a boy eleven years of age, where his attempt at reduction of the dislocation was supposed by himself at the time to be entirely successful. The patient received the necessary attention within two hours after the accident, and the occurring snap was obvious, but he utterly refused any dressing—in fact, ran away. Dr. Hamilton, however, saw the little fellow for several days in succession, but did not, until the tenth day, discover the fact of a recurring luxation. That this was the case he proved by placing the boy under chloroform and replacing the bones, which remained in place, making a slow recovery. This surgeon, believing that he had not reduced the luxation, since he had omitted the rule with reference to the carrying the hand up, as the proper test of reduction, expresses a sense of mortification at having failed to reduce the bones to their proper relations. Now I can not believe, and I think the profession will readily join in my skepticism, that Dr. Hamilton was mistaken in his first opinion. The too obvious signs, and the exceptionally special experience of so high an authority, forbid our acceptance of such an explanation. Gravity as an agent in carrying the arm downward, and thus inviting the recurrence of the luxation, is a much more probable solution of the problem. But there is another case in justification of my explanation of the one related by Dr. Hamilton, which is reported by Dr. J. N. Arnold, of Clyde, N. Y.

This was also that of a boy, three years the senior of the last, whose elbow was dislocated backward. The rectangular dressing was used; but the boy preferred to carry his hand in his pocket (this, without the Doctor's knowledge), and it was again luxated. These cases, collected from not a wide territory, not only confirm the propriety of the practice of rectangular dressing, so universally recommended by teachers and writers, but also illustrate the great danger of its omission.

As regards the other luxations at the elbow, I can not say much of the bones singly, but I have been in the habit of dressing all injuries, fractures as well as luxations involving the joint, at right angles for the first week or ten days, except fracture of the olecranon.

To pursue the subject further, I do not believe that in luxation of the wrist any special care is necessary, but of this I am not prepared to speak of my own experience. There are dislocations of the ulna, both backward and forward, which are seldom seen, but when restored should be retained by compress and bandage.

There is, however, a luxation of the ulna in connection with the fracture of the radius near the joint, which I believe to be very common, perhaps the most common one in the human body, not even excepting that of the humerus in the axilla. I know very well that this opinion is not accepted by the profession, but to my own mind it is so clear that I urge the great necessity of a complete rectification of deformity in these cases, at the cost of pain and strong effort, and then the careful and constant pressure of the ulna upward. My belief is very decided that gravity is the best means of retaining the head of the ulna in place, by bringing the weight of the hand and arm to bear on a compress under it, but the plan is not absolutely necessary. Still, my views on this subject I do not intend to press at the present time.

Touching the displacements of the bones of the carpus, and the carpal articulation of the metacarpal bones with them, I may remark that, after their rectification, a constant tendency to recurrence must be restrained by compress and bandage. The phalanges, however, when their luxations are reduced, require no retention apparatus.

The deep socket of the acetabulum does undoubtedly afford by its shape the best assurance of retention that can be offered in the human body by mere passive resistance to the recurrence of a luxation. But even the hip-joint is subject to this accident if the precautions of quiet are not observed; the lax ligamentous continuity resulting from the separation of the torn surfaces easily invites a repetition of the displacement.

Of this class Dr. Bigelow reports three cases, one of which was my own.

J. B. P., Co. H., 148th N. Y. Volunteer Infantry, U. S. A., when on the march from Bermuda Hundred to Drury's Bluff, May 13,

1864, while skirmishing up a hill sprang back to avoid the gun of a comrade in advance. His left foot became entangled in the root of a bush and was held firmly while he fell over. The weight of the body and the twist of the fall dislocated his hip. The fight was going on actively, but in his disablement, recognizing that something was out of place, he called upon his comrades to pull at his foot, with the belief that it would give him relief. In this he was not mistaken. The complete restoration of function, and the peculiar surroundings, caused him to feel that it was not a matter of much moment. He immediately resumed his skirmishing and marched seven miles, from 10 A. M. till 6 P. M. He lay down at night, and was ordered out the next day as a sharpshooter. This duty called for every variety of position, such as crawling on the ground, and being on the knees and on the feet alternately. He continued this service for five days, and returned to camp to be put on the intrenchments, and worked there for two days and nights. He afterward went "on picket," and entered the hospital May 28, having thus been actively employed for fifteen days. That the ligament should be lax under such constant motion, is not a matter of surprise. But the interference with nature's plan of repair resulted in a chronic inflammation, marked by much tenderness in the act of walking, along with an easy recurrence of luxation. This last he could produce at will. Fixing the foot firmly on the ground, he bent the knees a little and twisted the pelvis backward on the affected side, when the head would suddenly leave the socket for the dorsum ilii, and then he would restore the bone by reversing the movement. To this I may add still another case in one of our own profession, who was also capable of producing this luxation and reducing it at will.

Of the knee and ankle it may be said that the laceration of ligaments and even concomitant fractures are so considerable as to demand the use of splints.

It only remains for me to say that the bones of the tarsus and metatarsus must be retained by compress and bandage, with complete rest.

THE SIGNIFICANCE OF CERTAIN SYMPTOMS IN HERNIAL STRANGULATIONS, AND RULES FOR TREATMENT.

By FREDERICK HYDE, M. D., of Cortland County.

Read November 18, 1885.

THE symptoms of bowel obstruction are in the main identical, whatever the cause. When, therefore, an inguinal swelling, free from pain, direct or indirect, shows itself, and the tolerance of pressure is also true of the adjacent structures, we have come to believe that the signs of distress do not point to the groin tumor as the cause. The very mildness of the disturbance is misleading. The absence of general peritonitis is altogether too comforting, and thus day after day, for a week and a half or longer, creeps along, until the lurking evil betrays its true character, only after all hope has been abandoned. A strangulated hernia has done its work, alas! too well, for what means have we to restore to life several inches of dead intestine? Of what avail is herniotomy now? Stercoraceous vomiting, with its delusive recurrences at longer intervals, the non-tympanitic abdomen, and the bare fact that death does not invariably occur in all cases where the first-mentioned symptom is manifest, have robbed us of valuable time. Herniotomy, let me repeat, may give the intestine liberty, it can not give it life. Again, that other snare of the absence of pain in the tumor, or its reference to the epigastrium, leads up to an unfavorable prognosis, since the delay has only rendered questionable the minor operation of reduction by taxis, or the major one of surgically liberating the gut.

Acute strangulation at once shows itself by protrusions of recent date; and these acute cases are much more likely to be attended with severe early symptoms, in both inguinal and femoral hernia, than in the old cases which have worried through years. I may state it broadly, the greater the age of the sac, whether it contains intestine, omentum, or both, the more obscure is the symptomatology. I have seen symptoms of strangulation even more insignificant than those just mentioned in instances of a protrusion of only a portion of bowel, where an irreducible omental hernia had previously existed for a considerable time; in this class, however, the symptoms are less acute and less plainly marked in the inguinal than in the femoral variety.

Why, you may ask, should this wide difference exist in the severity of both the local and general symptoms? My answer is that the longer any form of abdominal hernia has existed, the more involved do the tissues become, and just in the degree that these changes have occurred will the lower histological and physiological life of the textures be affected. Now, when these conditions of malnutrition appear, the tissues, with their impaired sensory endowment, are insensible to acute pain, and the inflammation, while slowly progressing, gives little warning even in continuity of texture; these textures are in reality less obnoxious to hyperæmias and acute inflammations.

Now for a point a little more in advance: given, the disturbed nutrition of an old hernial sac, with the superaddition of an inflammatory process, which has gone on even to molecular death, there will be absolutely but little constitutional commotion. Pain is not the disturbing element, but the inverted peristaltic action. Has the constitution uncomplainingly accepted the burden, or have its sensibilities been blunted? I think the latter.

In thirty-seven cases of inguinal hernia, covering periods of continued disability ranging from twelve to forty-four years, in which I resorted to herniotomy, twenty were chronic strangulations that began with mild symptoms, lasting from six to thirteen days; seven of these were caused by unreduced omentum.

In one of these cases, the patient aged sixty-six years, strangulation followed the very first protrusion, taxis failed, and then herniotomy culminated in a rapid recovery.

In twenty-three herniotomy examples of femoral protrusion, of ages ranging from thirty to sixty-two years, save the one case noted below, seven were strictured from two to seven days, and six were complicated with unreduced omenta, and in one, a man of seventy-five years, strangulation happened at the first protrusion. This last made a good recovery, notwithstanding the discouraging outlook of the operation. These herniæ, with the exception just indicated, had existed from five to thirteen years. After the occurrence of fæcal vomiting the longest interval between the paroxysms was forty hours, the strangulation lasting nine days.

In some examples of the greatest abdominal distention coincident with the stercoraceous vomiting the fullness subsided suddenly, a change generally regarded as favorable, but, according to my individual observation, it has proved ominous of evil—with myself it has foreboded a marked progress toward fatal collapse. Another condition of affairs may be here noted, to wit, the varying degrees of alternating mildness and severity of the symptoms, which too often disappoint us in the prognosis and destroy the chances of life.

How far is vomiting a sign of hernial strangulation?

In connection with the present or former existence of an inguinal protrusion, if the vomiting be persistent, and associated with constipation, it is always to be considered with great care. A very nice adjustment of averages, with a thorough mastery of the medical points involved, may aid to an extent, but chiefly as excuses for failure. If only the contents of the stomach, merely the substances last swallowed, are ejected in the straining, it is not positively diagnostic of strictured bowel. If the material vomited be duodenal or biliary, and withal obstinate, it is a strongly suspicious indication of a narrowing caliber of the bowel. Earlier or later in the progress of the case, if, instead of simple vomiting, regurgitation of any fæcal material occurs, you may begin to calculate your chances of an advanced stran-

gulation, the more so if with all this there be a pain centered in the umbilicus.

In recent cases, in which the symptoms are more acute, the vomiting is earlier, and in these examples the faecal vomiting appears sooner, and in some instances it is merged quickly into regurgitation. In this type of cases both the local and general symptoms are so positive as to leave but little liability of mistake or of being lightly considered.

In herniæ of long standing I have said that the symptoms of strangulation were milder, and I now add that the vomiting is less likely to be faecal in the early history of the case, and is much more likely to occur at longer intervals, even when stercoraceous. The constitutional disturbance may be trivial, but, if the constipation be still obstinate, there can be but little doubt of your diagnosis.

In strictured intestine, combined with unreduced omentum, the latter condition antedating the former by one or more years, it has happened that the patient died from unmistakable strangulation, as proved by the post-mortem examination, when the taxis by a reduction of the tumor seemed to tell a different tale. The error lay in explaining the somewhat full doughy firmness, diminished indeed but still demonstrable, as being due to a thickened adherent sac, and that the contents had returned within the abdomen. The fact was, taxis only succeeded in part, and hence the persistence of the symptoms, which should always keep alive suspicion. I shall have accomplished one of the objects of my present paper if I may only emphasize the necessity of thoroughness and caution in these trying situations of the sick-chamber. Again I say, let no one be oversanguine that his task is complete as long as aught of faecal vomiting or tympanites remains. "Better be sure than sorry" is a good proverb.

Somewhat allied to the condition just noted, there may be added an incomplete reduction of the strangulated bowel or omentum, but oftener the former, where partial relief has been afforded, but which has eventually ended fatally. The tumor did not reappear, but still the symptoms of strangulation

remained. Here the post-mortem revelations show a small knuckle of intestine with its sac held just within the margin of the inner or upper ring, jutting up *within* the abdomen, and so firmly glued to its attachment as to require quite a degree of careful traction to loosen its connections.

Without the recital of individual cases in detail, as entailing wearisome repetition, I shall only give the clinical record of a single case, as being best suited to the end which I have in view.

John Morris, aged sixty-five, tailor, once a soldier in the English army, who had seen service in the Crimean War. He was in apparent good health since his residence in Cortland, which had been for several years. He stated that over thirty years ago there appeared in his right groin a small swelling, but he did not remember that he had any pain at the time of the first appearance of the tumor. Up to the date of presentation to me he thought that the size of the swelling had varied from time to time, not giving him any trouble, the only annoyance he experienced was "belching of wind from his stomach." While in his usual health on December 10, 1884, with his arms full of stove-wood ascending a long stairway, he suddenly felt a giving way of something in the vicinity of the old swelling in the right groin. He imagined that the swelling was larger than before, but the pain was only slight, and so he landed the wood at its destination and paid no more attention to himself. In the course of the next day, not having his accustomed evacuation from the bowels, and feeling out of sorts, he consulted a physician, whom he told that he thought his "bunch" was larger than ever before. He had already breakfasted, but sparingly, and had worked on his table, having slept as well as usual the night before. The physician examined the tumor in the groin, pronounced it a hernial protrusion, applied taxis, but without success. The swelling was not painful, nor was there the least pain in the abdomen; temperature normal, pulse 78. With but slight change in condition, the patient passed the next day working somewhat, and the night with a fair amount of sleep. Another surgeon was called in consultation, repeated the taxis without pain, and also without an anæsthetic. The volume of the tumor was thought to have been reduced a trifle, but there

still remained a spherical swelling of some two inches in diameter. Up to this time there had been no movement of the bowels. There had been no distention of the abdomen, no pain, only a free eructation of gas, no thirst. A warm water enema brought away only a small quantity of fæcal masses. Temperature now 100° , pulse 80. From this time until the 18th there had been occasional stercoraceous vomiting, and for three days before a few light paroxysms of hiccough. At the last date I saw the patient with the attending physician. Diagnosis, complete obstruction of the intestinal canal by an irreducible omental hernia. The giving away felt in the groin while ascending the stairs was due to the protrusion of additional omental tissue through the inguinal canal, and this, together with the old adhesions, caused the arrest of the intestinal circulation; the exact point of stricture was not positively ascertainable, but my suspicions pointed to the implication of a loop or knuckle of gut and a stricture of the old outward omentum; either that, or of omentum just within the abdomen, near the site of the protrusion. I advised that the common incisions for strangulated inguinal hernia be made, as being the only possible way of relieving the one or more strictures. A consultation with three additional surgeons was now held. They found so entire an absence of both local and general severe symptoms of strictured bowel, the abdomen not then so swollen nor as tender to the touch, the temperature of the patient but a trifle higher than normal, and pulse 90, that they were of the opinion that the obstruction would prove to be only temporary, and therefore overruled the proposed surgical interference, merely enjoining quiet, with opiates if necessary. Still they had not seen the fæcal vomiting, and may have been skeptical on that score. On the evening of the 21st I was again summoned, and learned that within the last two days he had repeatedly vomited fæcal material, but that previous to this he had passed sixty hours without vomiting, retching, or regurgitation. The members of the former council convened again December 22d. Patient's pulse during the last two days had varied from 90 to 113; sleep had been obtained at nights under the effect of a moderate-sized opiate. Countenance now somewhat sunken, skin moderately cool, no pain, the urine normal in color, voided readily, but diminished slightly in volume, hiccough more frequent. For the last five days tongue but thinly

furred, and every day some food had been taken. Mind still clear, abdomen not tender nor tympanitic. The local appearances of the inguinal tumor, however, had remained the same. Herniotomy made at once, during narcosis by ether, which was rather slowly induced.

The tumor occupying the ordinary site of an oblique inguinal hernia, the incision was begun at its upper part and carried down over its center three and a half inches. The sac when brought into view appeared slightly hyperæmic, and was distended moderately with fluid. On opening this, the liquid part of the contents was but slightly colored, and of non-offensive odor. After the escape of this fluid through the wound in the sac there was disclosed the irreducible portion of omentum, showing the tissue-change incident to its long extra-abdominal situation, while the inner part of the mass of later protrusion was congested, having the common look and feel of strangulated omentum. The stricture was readily detected at the inner ring, on dividing which the later protruded omentum seemed ready to return into the abdomen; but, before allowing it to disappear spontaneously, or by taxis, a careful digital search for a portion of intestine was made, but none could be detected in any part of the omental mass; the hunt could not have failed in thoroughness, for the opening was now quite free and could be easily swept. The outer adherent part of omentum was cut away, while the recent portion was returned into the abdomen. A still further careful exploration within and around the opening into the abdomen detected no trace of bowel; only, at the farthest point reached by the finger, upon the right side of the patient, there could be felt a firm, immovable mass that appeared to be adherent to the inner surface of the abdominal wall.

Just as we were about closing the wound, with self-gratulations of having performed our full duty, there suddenly gushed through the opening several ounces of fluid, the same in look, consistence, and odor as that which the patient had previously regurgitated. The wound was closed, and the patient placed in bed greatly exhausted. On the subsidence of the anæsthesia the patient swallowed a small quantity of stimulant. The operation was made at 3 o'clock P. M., and he died at nine o'clock the same evening.

Autopsy, eighteen hours after death :

On opening the abdomen the omentum was seen stretching downward, converging itself to a narrow point at the region of the internal ring, where it was quite firmly held. Faecal material was abundantly extravasated among the lower viscera. In the lower part of the abdomen several feet of the small intestine, in a state of mortification from the incipient to complete, was discovered just ready to slough ; but the perforation through which the faeces had escaped was in the bowel, now adherent to a portion of omentum, but much more extensively to the wall of the abdomen, to the right and upward from the inguinal region, extending a distance of several inches. In what constituted the oldest adhesions the perforation was found to be an inch in extent, and through this there was the opening into the peritoneal cavity. The caliber of the ileum was double its normal size, with thickened walls, while the colon was not more than one fourth.

Is it said that the example just given is an exceptional one, then I reply that several of my recorded cases embrace a period of strangulation ranging from eight to thirteen days.

Now, what are we to learn from this case and its like ?

1. In proportion to the length of time that an inguinal hernia has existed will the signs and symptoms of its strangulation be more or less mild and chronic.

2. In case of long-standing inguinal hernia, in which the signs of strictured bowel are more obscure, with total obstruction of the canal, it is not safe to wait for faecal regurgitation before deciding that positive strangulation exists.

3. When strangulation occurs in the first protrusion, whether it be an enterocele, epiplocele, or both, the symptoms will appear earlier and with greater severity, and the stricture will be less likely to yield to taxis.

4. In semi-chronic strangulation, with early faecal vomiting, with hiccough and obstinate constipation from the first, and but slight local or general pain, with non-bloated abdomen, no time should be lost between a failure of the taxis and immediate herniotomy.

5. In all cases of inguinal swelling, with defined margins of

earlier or later existence, with symptoms of obstructed bowel, without pain in the site of the tumor, but with complaints of severe distress in the epigastrium, and occasionally hiccough, in the absence of a more marked general disturbance, if a fair trial of the taxis does not relieve the case herniotomy again should not be delayed.

6. Following the operation of herniotomy, when the stricture has been divided outside of the sac, and the protrusion retires within the abdomen, of its own accord or by extraneous aid, the signs of strangulation still continuing, pass the finger up through the wound, to reach if possible, adhesions with bands, which may be loosened and so relieve the strictured tissues. This will be made more complete by rupturing the sac, and thus removing of itself an additional stricturing cause.

7. Too long a trial of taxis before dividing the stricture should be avoided, as it paves the way to the death of the patient, either with or without herniotomy.

8. After the appearance of stercoraceous vomiting, do not resort to taxis, but to immediate herniotomy, with the forearming of an unfavorable prognosis.

9. If, after opening the common sac, only smooth omentum may be seen, and intestine can not be detected, remember that the former may be attenuated and layer-like in structure. This may serve as an additional or false sac, and should therefore be carefully incised to insure the certainty of the presence of bowel, to decide upon its fitness for return into the abdomen, and to relieve a possible inner omental constriction.

10. Herniotomy, to be successful, should be made early after the occurrence of strangulation, because after the failure of taxis, a fair trial having been made without the result of complete reduction, it is essential that strictures, one or more, should be exposed and divided.

11. Why stigmatize herniotomy as a dangerous operation when the fatal results following it are wholly attributable to the advanced morbid conditions of the hernial sac and contents—caused largely by protracted taxis and delayed division of the strictures?

DISCUSSION.

DR. GOULEX.—I am sure we shall all agree with our distinguished Fellow—the conclusions of whose instructive essay are so eminently practical and sound—that consultations, in cases of strangulated hernia in which a doubt or a difference of opinion arises, especially when there are three or four consultants, are often hurtful to the patients, owing to the delays which such discussions entail. Wait a few hours, or another day, is not an uncommon utterance in these circumstances; but another day's delay, or even a few hours, may be sufficient to insure a fatal issue, whereas, if the attending surgeon be left to his own resources, and be allowed to exercise his judgment, he gives his patient the benefit of the doubt, operates early, and saves a life.

Suppose the operation be performed and no hernia be found, there will not necessarily follow any great harm; on the contrary, the result may even be to remove a growth which may have been causing some annoyance and anxiety to the patient. To illustrate this point, let me mention two cases in the diagnosis of which a doubt existed; but, some symptoms of strangulation being present, an operation was performed, and no hernia was found.

The first case was that of a healthy young married woman, who had a "lump" in the upper right femoral region, exactly in the site of a femoral hernia. On rising one morning she experienced a sudden, sharp pain in the tumor, became faint and vomited; the vomiting recurred at short intervals throughout the forenoon, and the pain continued, but was not so severe as at first, and the tumor was tender to the touch. A surgeon was summoned, who, after careful examination, remained in doubt, but finally concluded to operate, and did so before he left the house. He made an incision upon the tumor, and in due time exposed what he believed to be a thin, transparent hernial sac, containing an unusual amount of clear serum. Before attempting to incise the "sac," he gradually raised it from its bed with the handle of the scalpel, and, to his surprise, when he explored its upper part with the finger, found it comparatively loose and completely enucleated, and removed it. Further exploration proved that there was no hernial protrusion. The wound was stitched, and healed

primarily, and the patient made a good recovery. The surgeon brought me the tumor, which I found to be a simple cyst about two inches in diameter.

Within three months after this occurrence, the same surgeon met with another case so much like the first that I need not here describe it; the symptoms were almost the same, the same doubt existed, the same conclusion was arrived at, the same operation was performed, the same result was obtained, and the cyst was nearly as large.

I now venture upon the following aphoristic dicta, which are in consonance with the utterances of our essayist, Dr. Hyde, whose sound judgment and long experience give the greatest value to his conclusions :

1. When a doubt arises in the mind of the surgeon respecting the existence of strangulation of the intestine or omentum in a case of incarcerated hernia, it is his duty to give the patient the benefit of the doubt by at once resorting to the operation of herniotomy.

2. Delay in relieving the strangulation is often fatal, while herniotomy in a case where no strangulation exists is not usually harmful.

3. Medicinal treatment is often delusive, and local applications, such as opium and tobacco poultices, ice, etc., are, in most cases, worse than useless.

4. Persistent taxis is infinitely more dangerous than herniotomy, and such taxis, even when it is followed by reduction of the hernial protrusion, is often the cause of fatal peritonitis.

5. Another, though rare, effect of violent taxis is the reduction in mass of the hernia in its state of strangulation.

6. As a general rule, two minutes of gentle taxis, the patient being in a hot bath, will settle the question as to the possibility of safely reducing the hernia.

7. Therefore, it may be said with propriety, that the less taxis, the less ice and other topical applications, the less opium, the less general or special meddlesome interference—which too often seriously injures the intestine—the better the chances of recovery in the event of a herniotomy. This is particularly the case in femoral hernia.

I have long since made it a rule to operate as soon as called to

such cases of strangulated hernia, and I attribute the success that I have had principally to early surgical interference. In this connection I wish to state that, for a number of years past, I have abstained from incising the neck of the sac in femoral hernia, but instead have made a divulsion thereof by gradually insinuating the index finger through the free opening made in the sac (I always open the sac), until it enters the abdominal cavity, and have had no trouble in effecting reduction of the intestine; the object of this procedure being to avoid division of the obturator artery, which, anatomists assert, takes an abnormal course in this direction once in about six cases.

I fully agree with Dr. Hyde that the operation of herniotomy is not, *per se*, a dangerous procedure.

When reduction of the hernia has taken place in its strangulated condition, and in case it is found impossible to liberate the intestine with the finger introduced through a wound made in the inguinal region, I believe it to be proper either to extend the herniotomy incision upward or to incise in the median line, open the abdominal cavity, and expose and liberate the intestine.

There is scarcely a chance of disagreement on the question of excision of a portion of the omentum when it has long remained imprisoned in a hernial sac and is thickened from inflammatory action. The reduction of a diseased portion of the omentum after herniotomy is very apt to mar the success of the operation, and it may be said to be a common cause of fatal peritonitis; therefore such portions of diseased omentum should, as a general rule, be excised and not returned into the abdominal cavity.

DR. T. R. VARICK, of Jersey City, N. J.—Mr. President: In response to your request, I can only say that I came this afternoon simply as a listener, and more for the purpose of receiving instruction; I am conscious of being unprepared to discuss this question. I have listened with very much interest to the admirable paper by Dr. Hyde, as well as to the excellent remarks of my friend Dr. Gouley. I would say, in this connection, that I indorse the doctrines promulgated, more especially those having reference to the advisability and necessity of an early operation. My belief is, and my experience for many years in private as well as hospital practice, that more deaths result from injudicious use of taxis than from the operation of herniotomy. Unfortunately, in hospital

practice, many of the cases of strangulated gut have been the subjects of injudicious attempts at taxis, and therefore the rule has been, and is, not to resort to taxis at all, but to operate at once; an operation, in my opinion, when done at once, is as safe as any other surgical measure, in nine cases out of ten. One case I can call to mind now that had been under treatment outside, and had suffered from symptoms of strangulation for four days. It was an oblique inguinal hernia. The tumor was ecchymosed, hot and tender. I operated at once and found the intestine. There was omentum in the sac in a sloughy condition. And there was besides a transverse rupture of the intestine, extending about two thirds around the caliber of the intestine where it had been rammed against the internal ring. The man, of necessity, died.

DR. A. PALMER DUDLEY, of New York County.—I would like to speak of one case I know of that will illustrate the danger of delay. The case was in the city of Portland, Me. The gentleman was treated for five days by an irregular practitioner for abscess of the inguinal region. After that time he came under the observation of the late Dr. Tewksberry, who discovered strangulated hernia. He operated at once, and found the intestine dead, and removed eight inches of it. The lower portion of the bowel was closed, and the opposite end was brought up and stitched to the edge of the wound, and the man recovered. He is now alive and able to attend to work, though somewhat thin in flesh. He has lived ten years, while the surgeon who operated has passed away.

Another operation, in which I assisted, was performed on a gentleman eighty-one years old. He was in a field mowing during a summer afternoon, and stepping into a hole in the ground suddenly ruptured himself. The operation was made by Dr. Gordon. The hernia was reduced and the intestine replaced, and the pillars of the ring stitched up and the wound closed. The mental disturbance was considerable, and during temporary delirium on the night of the third day the old gentleman got the dressing off and opened the wound, and managed to get quite a portion of the intestine out of the wound. He was discovered by his nurse, and the doctor sent for. He reclosed the wound, and the man recovered, showing that considerable may be done for strangulated hernia even in the very aged.

DR. E. D. FERGUSON, of Rensselaer County.—I do not rise,

Mr. Chairman, to discuss particularly the question presented by Drs. Hyde and Gouley, for I think we are thoroughly in accord with the principles laid down. But, however ready we may be to operate for hernia, the difficulties that surround the case in making a diagnosis are sometimes so great that the responsibility that rests upon the physician is very painful. The liability to error I believe is also very great in that old subject, hernia. When this matter was brought up and discussed at Syracuse, I related there an instance that occurred under my own observation a good many years ago, in which preparations were made for the operation of inguinal hernia. Reasonable efforts having been made at reduction, the anæsthetic was administered, and I had taken my knife in my hand to proceed with the operation when the hernial tumor disappeared. The inguinal canal was perfectly and completely free, without any touch on my part whatever. The patient was allowed to come from under the influence of the anæsthetic, expressed himself as feeling better, and was congratulated on escaping an operation; and myself and the other physician went home. It was quite a distance from where we resided. We were summoned again the next morning, simply to find that the patient had expired before we reached the house. An autopsy was made, and the hernia was found in its sac, in the abdominal cavity, a small knuckle of intestine being included in the sac and quite a portion of omentum, while another portion of omentum extending above to some adhesions had been converted into a rope. The only explanation I could give was that while the patient was conscious he had arched the upper portion of the spinal column well forward, and the straightening of it had increased the distance between the internal abdominal ring and the attachment of the hernial cord, and thus the sac was entirely reduced.

Only a few weeks ago I made the autopsy in a case not seen by me during life, which illustrates another difficulty. The patient, a very stout woman, between forty and forty-five years old, was taken with vomiting and some pain in the abdominal region. The symptoms were not urgent. The physician prescribed for her, and saw her, I think, two or three days in succession. He made an examination, and found a retroverted uterus and corrected the position, introducing a pessary. A certain degree of discomfort, which was not severe, continued from time to time,

and the vomiting also. The vomiting was not stercoraceous. He saw the patient one morning, and on the next was informed of her death. A short time before his last visit she even had had a movement from the bowels. Just before her death a physician who was near had been called in, but failed to make a diagnosis, although he had examined for hernia. She did not show symptoms of extreme danger until a short time before her death, after she had speedily passed into a condition of collapse. I examined the dead body for evidence of tumor, but could not find any. I opened the abdominal cavity and found evidence of obstruction, which I traced to the inguinal region. The small intestines above the point of constriction were largely distended with gas, the distention apparently having come on rapidly a short time preceding death. There was a hernial protrusion just above the internal inguinal ring. The hernia was small, consisting entirely of a small knuckle of intestine. I made an incision, and by exploration could not then feel the hernial tumor, which did not seem to follow the course of the inguinal canal, but doubled upon itself upward between the layers of the abdominal muscles; and the tumor itself, which was very small, seemed to project as much in the abdominal cavity as against the soft walls. Even when fully exposed, it was quite difficult to distinguish it as a tumor. I do not know how a diagnosis could have been made of inguinal hernia in this case, as the vomiting was not at all characteristic.

MEDICINAL AND DIETETIC THERAPEUTICS OF THE COMMON FORMS OF CHRONIC INTESTINAL CATARRH.

By JOHN S. JAMISON, M. D., of Steuben County.

Read November 18, 1885.

IN the first volume of the transactions of this Association, for the year 1884, may be found a paper of mine, entitled "Chronic Intestinal Catarrh." The limited time then at my disposal debarred me from referring at greater length to the more common manifestations of this disease presented by that class of invalids generally designated as "office patients." These preface their clinical history, notwithstanding they profess to have suffered not a little discomfort both physical and mental, with the claim that they have not been obliged to relinquish their usual daily routine of work; from having at first been deluded into the belief that their ailments were only temporary, they fall into the opposite error of dreading an incurable malady. They complain—and I refer only to those instances in which the more secondary complications have not begun—of a diminishing weight, running on through a period of many months or years; of their muscles becoming soft, flabby, attenuated, and with a wasting of adipose tissue. They show conjunctivæ slightly icteric; a tongue broad, thick, fissured, foul at the base, and trembling upon protrusion; the skin of an earthy-sallow hue; the hypogastrium tumid and supersensitive to pressure; hepatic dullness moderately extended; splenic dullness also, but only occasional; heart-impulse weak, and, at times, intermittent; perhaps the superficial veins of the lower abdomen perceptibly distended; hands puffed, with only the superficial veins thereof prominent; unpleasant sense of fullness in the

hypogastric region one or two hours after meals, especially when food of the amylaceous variety has been taken; flatulence; action of the bowels torpid, with irregular dejections, solid, semi-solid or muculent; a sense of weakness in the lumbar region, legs, and arms; pain near the posterior borders of the scapulæ, more frequently the right; appetite for breakfast poor, for dinner and supper generally good; urine often scanty, irritating, and high-colored; sleep frequently disturbed, normal only two or three hours after retiring—the remainder of the night being passed in a state of physical and mental unrest, especially until digestion is complete, and the residual ingesta has passed into the colon or has been expelled per rectum. Now, corroborative evidence in the diagnosis of these cases may be elicited from the past history of the patient, extending back many months or years, even to the period of infancy, the antecedents bearing evidence of an acute attack of indigestion and diarrhoea from which they have not fully recovered.

The foregoing train of general symptoms declares these cases to be a mild form of chronic intestinal catarrh, which is amenable to a line of treatment partially, if not wholly, successful. The picture may not be perfect in detail; if a sketch, I trust that it is sufficiently suggestive.

The therapy invokes the aid of only a few well chosen drugs, but an appropriate dietetic regimen is of greater utility; the drugs are welcome enough, the regimen not so. The importance of a rigid discipline in every particular, even to formulating the diet, must be fully appreciated to insure even partial success, but let me premise that recovery is possible in most of the cases which are free from marked anatomico-pathological conditions of the intestines. This I give as an element in the case which should give you encouragement for persistency. Time also is an important factor in the discipline, since many months may be required for any degree of substantial improvement.

In the "common forms of chronic intestinal catarrh," the causes of the constipation, which is a leading feature, are principally situate in the small intestine instead of the colon—

the latter being frequently free from disease. The diagnosis of this fact is based upon the tympanites more or less present, as well as the tenderness upon pressure of the hypogastrium; these two conditions, notwithstanding the presence of the scybalæ in the dejections, are evidence quite enough that the disease involves the small intestine. Again, the psychological disturbances confirm our conclusion somewhat, as manifest in the morbid fears of the patient; they are not so marked, nor so persistent, as those accompanying the profound anatomico-pathological conditions in cases of greater chronicity.

As a general rule, your patients, with a usual aversion for cathartics, habitually neglect their daily evacuations. They may even aver that defecation is daily, but this is true only in a partial degree, as it is merely the fluid and semi-solid, not the cylindrical mass which passes off; this last, being retained, becomes impacted in the hepatic, splenic and sigmoid flexures of the colon. Under such circumstances a laxative is indispensable. For this purpose castor-oil is preferable, but the following may be employed for those having great repugnance to the oil. *R* Ext. colocynth. co., gr. xlvij; hydrarg. chlor. mitis, gr. xij; pulv. ipecac., gr. iv; ext. hyoseyami, gr. xxiv; glyceriti tragacanthæ, q. s. *M*. Ft. massa et div. no. xij capsulas. *S*.: One to be taken at bedtime; should the capsule disappoint by the next morning, a tablespoonful of Rochelle salt should be taken every three hours until the desired result is obtained. Oatmeal or rice gruel and beef-tea should be the prescribed diet until the following day, when, for the morning and evening meals, might be given oatmeal mush, or rice well cooked and dressed with cream and sugar; a slice of stale bread with good butter; the yolk of one or two eggs soft boiled, and a cup of black tea or coffee. For dinner I should advise fresh beef or mutton, boiled or roasted; fresh fish boiled, or raw oysters; stale wheat bread with butter; onions boiled, and a goblet of fresh milk, to be immediately followed by pepsin and hydrochloric acid as per formula hereafter noted. The pancreatic ferment, as a general rule, should be taken about two hours after each meal throughout the entire time of treatment. The prescription for this ferment is as fol-

lows: \mathcal{R} Liq. pancreatici, f3j-ij; sodii bicarbonatis, gr. xv; aquæ, f3ij. Misce. Fiat haustus. S.: To be taken two hours after each meal. At bedtime one or two pills of the compound extract of colocynth and extract of hyoseyamus, or the compound rhubarb pill, should be taken and repeated each night, if necessary, to insure daily alvine dejections.

The foregoing medicinal and dietetic formulæ, with slight variations as to kind and quantity, may be continued many days, or until digestion and peristaltic action of the bowels are improved, when other articles of diet may be added to, or substituted for, those already specified. Keeping in view—in the words of J. Milner Fothergill—that “starch, albuminoids and fats, each of these has its own digestion, its own portion of the digestive act,” we shall not go amiss in determining the dietary suitable to the condition of the patient at any stage or period of the treatment. Milk, if easily digested with or without the aid of pancreatine and soda, is a convenient and valuable article of food; on the other hand, if not well borne by the digestive organs, the discomfort is pronounced, especially if taken at supper or a short time before retiring for the night; in this case the peptonized extract of beef, dissolved in warm water and seasoned with pepper and salt, may be substituted. Well cooked subacid ripe fruits, free from small seeds, are commonly well received by the digestive organs; but much discretion and no small amount of experiment are necessary to insure their acceptability to the different conditions and idiosyncrasies of patients. I do not favor the potato, unless thoroughly baked or roasted, since the temperature of boiling water is not sufficiently high to disrupt the starch cells. I decidedly oppose, as likely to defeat your purpose of cure, bread made of wheat flour, very recently baked, hot or cold; fruits preserved in syrup of a high density, and cheese of any variety.

The functions of the liver are generally found to be more or less deranged. Quite frequently these may be improved or restored to the normal condition by the daily use of the Carlsbad water before breakfast. In the absence of this the following formula may be employed with nearly the same therapeutic

effect. \mathcal{R} Sodii sulphat., \mathfrak{z} j; sodii chloridi, \mathfrak{z} ij; sodii bicarbonas, \mathfrak{z} iij; aquæ ferventis, Oj. M. S.: When cool, a tablespoonful to be taken one-half hour before each meal. I can not, in the class of cases now considered, recommend too highly the daily use of this same sulphate of soda in small quantities, persisted in during many weeks, for these attendant functional derangements of the liver and duodenum.

The stomach, in this disease, having necessarily imposed upon it, during the partially suspended intestinal digestion, a supplemental function, demands special attention. Therefore, if its peptic powers are weakened, gentian, nux vomica, or ipecacuanha in small doses, may be taken before meals; or, better yet, pepsin in combination with hydrochloric acid. \mathcal{R} Pepsinæ gr., xvj; adde syr. aurantii corticis, glycerin, $\bar{a}\bar{a}$ f \mathfrak{z} j; acidi hydrochlor. dil. gtt. xx. M. S.: A teaspoonful after meals whenever animal food has been eaten.

As already indicated in my paper of last year, next in importance to the dietetic regimen suited to the weakened intestinal digestion are the agents required to produce daily evacuations of normal consistency. As I have already hinted, you must look for an opposition to the exhibition of the cathartics necessary to secure this object, inasmuch as your patient has an unreasonable dread of incurring a greater degree of debility, and certainly of the gripings coincident with the peristaltic movements. As being attended by the least conscious discomfort to the patient during their action, I should recommend their being taken on retiring for the night. When appropriately selected, you will find them exceeding serviceable in disposing of not only the residual ingesta but the disturbing gases as well. Now, whatever the medicine chosen with these objects in view, insist upon its continuous use with the most scrupulous regularity, subjecting the quantity alone to variation. Among the medicinal agents you may adopt, rhubarb, in very many cases, asserts its value, especially when combined with the bicarbonate of sodium. When taken before or after meals, for the purpose of exciting more perfect gastric digestion, smaller doses are required than when used as a laxative; the

latter effect is likewise better obtained when the medicine is taken upon retiring at night. One third of a teaspoonful of each, in the form of a powder, thoroughly triturated in the mortar, and taken in syrup or water, is generally sufficient to open the bowels on the following day. You will even be surprised and gratified by the anodyne effects which are somehow or other indirectly produced.

DISCUSSION.

DR. J. P. GARRISH, of New York County.—In spite of the native modesty of a New York citizen, and a practitioner of forty-eight years' standing, I must discourse somewhat upon the paper just read, inasmuch as it involves the subject of hygiene, with which I have been more or less particularly interested. Yet, notwithstanding its importance, it is much neglected, notably by the public, and somewhat by the physician. A great many of our patients are satisfied with medicine, and that only. What care they for preventive measures? They clamor for "something to take," and we give them placebos, but in our consciences we know that hygiene and diet are our main reliances. Both we and the public would be much the gainers were we to throw most of our choice formulas overboard and take to drinking in the pure air, of course, along with a certain amount of scrutiny as to what goes into the stomach. That we are not living as we should—to adopt a common phrase—goes without the saying. I frequently go into a house reeking, not with filth, but—what is worse, because more insidious—foul with a tainted air. I inquire into the plumbing, and when I find any imperfection in that respect I inform the Health Board. Here, mayhap, physician after physician has gone into the house and never concerned himself an iota about what his patients were breathing. But, legislate as you may, people will huddle together in tenement-houses, which I regard as nothing more nor less than whited sepulchres. May we see the day when these towering structures—with every conceivable device to gain a few inches of rentable area—when these structures, I say, shall be doomed to their deserved oblivion! Here should begin our war

against capital, for it is here that its carelessness, rapacity, and greed, show themselves at the worst.

There are rampant in the profession many false notions regarding the proper feeding of the sick. When I first began my medical career, almost every person who had a fever got whisky and beef-tea—starvation diet, so far as the latter is concerned, unless something additional be given. Beef-tea, as such, I never prescribe, but order prepared what is known as essence of beef. My cooking recipe is very simple, to wit : Take a choice piece of beef, wash it and throw away the water, next place it over a very gentle fire, sufficient to warm it through, then cut the beef into small squares, and let the lemon-squeezer do the rest.

Now, you must concede that we have a great mortality among our children—is the adjective “fearful” too strong to express its dimensions? I scarcely think so. Wherein lies the root of the evil? I answer, in the abject ignorance of the parents. Why I have known a child, who was hardly able to hold himself up without being cushioned with a pillow, given beef, and a mouthful or two of potato, all duly moistened with beer! “Oh, it won’t hurt him,” says the mother, “I always bring up my babies that way.” There seems to be in such instances a disposition to evolve these atoms of humanity as rapidly as possible into maturity. But, unfortunately, the penalty falls upon “the innocents.” The rule that no child should have anything stronger than milk until it has all its teeth may be conceded, but it is seldom observed, as it should be, to the letter.

Perhaps it may be not strictly relevant, but then I beg to be excused on the score of its importance, if I refer to the matter of clothing the infant. My rule is to have the new-born child put into flannel as soon as it is washed ; this method of equalizing the body-temperature I would, if possible, have continued through the period when diarrhœas are imminent ; attention to this little matter will rob the grave of many a victim. If the diarrhœa is taking on a chronic form, and the fashionable mother has already discarded the use of flannel in the case of her child, then I advise recourse to a bandage made of the material mentioned, to be applied with a moderate degree of snugness. My next step, then, is to insist that fresh milk be the exclusive diet, and, mind you—no meat, no vegetables.

As we know that milk and butter are most powerful absorbents of atmospheric impurities, I insist that due precautions be taken. I do not allow the milk to be put into refrigerators ; I instruct the mother to deposit the pitcher or bottle upon a piece of ice, enveloped in flannel.

In dysentery, I rely upon the subnitrate of bismuth—grs. v to grs. x—given as an enema as often as there is an evacuation ; and, when there is pain, add the tincture of opium in small doses ; but, above all, I look well to the diet. The polypharmacists may smile, but you save the children.

DR. C. G. POMEROY, of Wayne County.—Will the last speaker favor us with his views upon the dietetic value of oatmeal in weak digestion ?

DR. GARRISH.—Oatmeal I do not recommend. If we eat our three meals, and nothing between, with an eye to variety in the menu, in my opinion we answer all proper cravings of the appetite. I do not see any necessity for a habit which requires so much assiduous cultivation.

DR. POMEROY.—I desire to say that it is fashionable now to prescribe oatmeal. The epidemic commenced only a few years ago, and I have always opposed it. I was very much gratified last winter in finding no less a man than Professor Roberts Bartholow condemning it *in toto*, as being inimical to all weak digestive organs.

DR. DARWIN COLVIN, of Wayne County.—A word on this oatmeal question. For fifteen years my health has been poor, but for more than two years past I have eaten oatmeal and milk twice a day. This has been an inflexible rule, and I must say that I have not been in better health for ten years. With Dr. Garrish, then, I fully coincide, except with reference to oatmeal.

Now, as regards milk, it is told that the famous Professor Meigs once said to a lady, "Your child has no teeth ; you ought to know that a child should have nothing but milk until it has its full set of teeth." I do not object to the use of barley-water, in health or in intestinal irritation.

I must protest against giving cathartics in intestinal catarrh, with all due deference to my friend who has read so good a paper, but I can not refrain from asking him why keep up a peristalsis when the indications are for rest as nearly absolute as possible ?

I propose an easy solution to some of the problems. I would not allow a child to go to the table with its parents. I have in mind a woman who kept this rule until her children were three years old, and no larger or more robust men are now to be found in Wayne County.

DR. WILLIAM GILLIS, of Franklin County.—I hope in the consideration of this subject that we do not lose sight of the appetite, which ought to be a trustworthy guide. As in debate we are not expected to agree, so pardon me for my flat-footed statement that oatmeal under ordinary circumstances is, perhaps, the best food for man. I will refer you to my own condition. I am a Scotchman, fed on oatmeal from my birth, and, without vaunting my prowess, have, perhaps, as much muscular energy as any man in the Association. Still, I think in children with weak digestive organs oatmeal is not a proper food. As a laxative in that form of indigestion in which constipation is a marked feature, it has no superior.

DR. ISAAC G. COLLINS, of Westchester County.—We have had an individual instance of the efficacy of the use of oatmeal, and I should like to draw a national one. Let us look at the Scotch, fed on oatmeal; at the Irish, fed on potato; and then at the English, fed on beef and ale. None of them are contemptible as specimens of humanity; none of them are puny, weak, and emaciated. All of them seem to be well-nourished; in fact, they thrive upon the food best adapted to their habits and condition. Acclimation, heredity, and the kindred factors, have done all that was necessary to enable all these races to maintain their foothold upon the globe. It may be that the familiar doctrine of "the survival of the fittest" comes into play, and that those who can not withstand the severest tests early fall out of the line, or at least do not have the opportunity to perpetuate their kind. May we not lay it down as an axiom that what we eat with a gusto is most likely to do us good? We have to trust our stomachs just a little at least. May we not say with truth, that the question between the demands of a given constitution and the proper food-supply can never be settled? I can not indorse Dr. Jamison's paper as a whole, although most, perhaps all, of his suggestions are excellent.

DR. JAMISON.—A part of my paper seems to have been misunderstood. The Fellows will notice that in speaking of the use of

the compound extract of colocynth I referred to chronic cases merely, where the mucous membrane had been so changed that, to use a common word, it was "numb," and you would have to use powerful measures to excite peristalsis.

In regard to oatmeal, I do not pretend to feed it to a child under a year old. The pancreatic organ is not developed enough to throw out its diastatic fluid at that stage of life.

A CURSORY REVIEW OF THE EPIDEMIC AND ENDEMIC DISEASES OF SULLIVAN COUNTY DURING THE LAST THIRTY-FOUR YEARS.

BY ISAAC PURDY, M. D., of Sullivan County.

Read November 18, 1886.

HAVING been committed by a promise, which I feel compelled to fulfill, albeit at least to me in an unsatisfactory manner, but, perhaps, what may seem unimportant to me may be of some value to the Association, I therefore present a brief history of certain personal experiences. As the title of my paper foreshadows, you can not expect more than a cursory review.

In the early part of my career of general practitioner, which began in 1851, most, if not all, the diseases were of an inflammatory, or as you may choose to style them, of a sthenic type. The views of the profession have since undergone some change, so that what I may have to say may not pass unchallenged, but, as the form of our constitution is essentially republican, I am privileged to state my convictions without fear or favor. My methods of treatment may savor of the antique, but you must admit that they were a reflex of the times, and that, therefore, I may have merely clinically adopted what I had been solemnly taught as constituting the only legitimate way, from which there could be no departure. I found pneumonia, pleurisy, quinsy (now regarded by some as essentially rheumatic), meningitis, and peritonitis common, and I treated them by the free use of the lancet, cathartics, emetics, and blisters. I also affected small doses of calomel, and believe me that my therapeutic axioms gave good returns for my fidelity—may I not say that my success was marked? Fever commonly designated as bilious remittent prevailed, the type, however, was continued, and may be rec-

ognized now under the nomenclature of typho-malarial. However, as it is not my intention to be controversial, I can only say that calomel, cathartics, diaphoretics, diuretics, stimulants, and blisters were used according to the indications.

About 1853-'54 typhoid fever began to be heard of, and was expected at our doors—the point of departure was expected to be from New York city and vicinity. But the pestilence did not arrive just then. The modes of transmission were fewer and its march consequently slower.

In 1856, during the early autumn, typhoid pneumonia appeared as an epidemic and extended through into the winter; its treatment was essentially “soothing and sustaining;” mild opiates to alleviate the cough; tonics, stimulants, and nutritious diet, with the avoidance of cathartics and the agents generally prohibited on account of their depressant nature. At all events venesection proved to be speedily fatal. Mayhap our statistics—I speak in a collective sense—were quite satisfactory enough, and should not be classed among the curiosities of medicine. We soon learned to avoid catharsis, because it was noticed that just one laxative dose was quite certain to produce an uncontrollable diarrhœa.

During the winter of 1859-'60 diphtheria began to prevail around Philadelphia, at the mouth of the Delaware River. It soon traveled up this river and its tributaries, taking until the autumn of 1861 before it reached the Mongaup Valley. It raged with malignant virulence, as an epidemic, for about five years. The first cases showed themselves at the falls of the Mongaup, and at the mill seats, or dams; afterward the disease began to segmentate up and along the tributaries of the Mongaup River.

During the worst period of this epidemic, which suggested some of the historical plagues of the Old World, a single home would furnish as many as six patients at a time. Some would die within an hour from the first onset of the disease. The people were panic-stricken, utterly demoralized, and ready to adopt the wildest measures, even for temporary exemption. The dark, cloudy days, and the cold, misty nights, added to the

general gloom and depression. An enemy entirely new to the profession of the day had come, and those of a former century who had coped with it had long since laid down their arms. Yet we soon came to know that, if life could be sustained for five days, the patient had some chances of recovery. We gave a sulphate of zinc emetic, that is, if our arrival was early enough, and then we followed up our supposed advantage with morphia for the pain, and fomentations of turpentine spirits and camphor for the throat. Besides, we exhibited quinia in large doses, with the old stand-by of muriatic tincture of iron as an adjuvating solvent, milk, beef-tea, and broths.

During the winter of 1861-'62 it visited the high grounds adjacent to the valley, some twelve hundred feet above the sea-level, losing little if any of its malignancy. Excited imaginations counted its victims by the legion; nearly all the diseases, indeed, took on a diphtheritic character. Croup now gained an ascendancy and baffled our best skill—the countenances of the victims from the first assumed a dusky hue, and all the symptoms were much intensified. Those who recovered did so by the aid of tonics and stimulants.

Again, in the succeeding winter, it returned, but in a new form—its character was hæmorrhagic (spotted fever, black fever, petechial fever). The skin was mottled with dark purple spots, the stomach rejected all forms of food, the bladder had lost its tone, and the bowels their power of retention. The patients generally sank, in spite of remedies, within from ten to twelve hours. In its appointed season the distemper came again, but its mood was milder. Instead of the dark spots there were pink patches, and the dark exudations upon the fauces gave place to those of a lighter color, the treatment was virtually *nil* and the victims few. There was no intermeddling with its clinical course, and there were no regrets—there was no onslaught upon the membrane save with a feather loaded with sweet-oil and turpentine. As an epidemic it came and as such it departed.

Now, what was the lesson? To me it read as follows: It came up the river and diverged along the line of its tributaries, made its first stop at “the Falls,” then at the mill-dams, and

then in mid-winter, in the coldest weather, it held the high grounds of the county as stubbornly as the lowlands, and with equal acrimony. It was infectious, nurses carried it in their clothing—some thought along with its peculiar odor. Bedding, carpets, packed away raiment, were suspected, in fact, everything that came at all in contact with the sick.

During the period of the first five or six years of the epidemic just described, or more especially during the latter part thereof, in the early autumnal months, a form of dysentery prevailed. The symptoms were choleraic, to wit, severe vomiting and purging, cramps, and cold extremities. Those attacked usually perished in a collapse, long before a resort to any remedies, or, to put it more justly, before their power could be tested. They died in from twelve to twenty-four hours. Sullivan County has been visited by four of these epidemics.

I can recall five scarlatinal epidemics, recurring at intervals of about five years. Sometimes the general type was mild, with a sprinkling of malignancy, as, for example, I have seen two very tractable cases along-side of two very malignant ones, all in the one family. I need barely allude to measles in its epidemic manifestations, it being exceedingly manageable in judicious hands. In fact, the majority of the cases are probably not brought to the notice of the family physician at all.

When diphtheria forced itself upon our attention in an epidemic way, its origin could be traced to some direct contagious influence, emanating from a distant point like New York or Jersey City. I have remarked that the river lines have not been followed—for the past ten years at least—as was the case when on its career as an epidemic. The law seems to be that the endemic is a degenerate scion of the epidemic family.

About 1881-'82 the fevers assumed the congestive form, and malarial fevers came up to us along the Hudson and its tributaries instead of the Delaware; their conceded starting point was New York city and suburban surroundings, so that they reached by a different and more indirect route. The congestions appear to choose the very cold weather for the manifestation of their power upon the lungs, bowels, brain, spinal cord, and kid-

neys. The sepsis is as variable as the individual constitution and the atmospheric influences, some being profoundly, others only trivially affected. Coma, stertorous breathing, and feeble pulse beats, may characterize the former, a debatable degree of health the other.

DISCUSSION.

DR. SAMUEL PETERS, of Albany County.—I am happy to say that I can indorse almost everything just heard in regard to treatment. I shall consume your time only for the purpose of mentioning one single point in regard to diphtheria. It has prevailed in Albany County, as perhaps in all counties of the State, all the year round. We meet it every few days, and the type is generally severe. The point which I wished to make was this : For about—since last November, at any rate, I commenced the use of corrosive sublimate. And, if it will not be considered boasting, I wish to say to you and to the gentlemen present that I have never tried anything that appeared to be so efficient. I prescribe it at the first visit, almost habitually, in doses of say one thirtieth of a grain to a child, and I repeat it as often as every two hours. Now, you may think, perhaps, that this is a powerful dose for a child two, three, or four years old ; and I would naturally think so myself. But this treatment is repeated for forty-eight hours on a stretch. As I make this a rule, I give this mercurial every two hours, night and day. There is no time to let the patient pass a dose in diphtheria. I even order the nurse to wake the patient to take the medicine. In conjunction with this I give about three or four minims of the tincture of the chloride of iron to a child, as often as I do the corrosive sublimate. Four minims every two hours, alternating with the corrosive sublimate. I also have great confidence in, and never neglect the use of, locally, iodine and glycerine. Judging from my success, being guided in its application to the throat by the severity of the case, I generally find that about once in four hours is quite enough, although I have repeated it every hour. No patient has ever been poisoned yet by this. I

have found that there would be mucous passages from the bowels. In that case I suspend the corrosive sublimate.

DR. COLVIN.—As I understand the title of the paper, I would ask whether this is a paper for discussion. I would ask if we are to criticise the treatment of the diseases in that part of the country, or in all parts of the country. It is liable to lead us into an interminable discussion.

DR. KNEELAND.—The gentleman said that the diphtheritic croup that occurs after diphtheria was almost necessarily fatal, and that was the prevalent opinion with us. It was the opinion with me, until, by the help of the stray medical pamphlet that came from the State of Wisconsin about eighteen years ago, giving three cases treated by a German physician somewhere near Milwaukee, I was enabled to break the jaws of death, after diphtheritic croup had taken two cases. There was a coffin lying with a girl in it; another was dying, and another was very ill. I was called, and found an irregular practitioner attending these cases. I said to him, that one is dead; that one is dying; what are you going to do with this? He said, "Nothing." I said, "I am not going to do anything, with you." I happened to have some persulphate of iron. I took a bit of cotton and wrapped it around a hard wood stick, and wet it with water and rolled it in the salt, and applied it to the throat. That child, now a woman, is a mother of as fine children as are in Onondaga County.

DR. CRONYN, of Erie County.—I arise with a good deal of pleasure to make a few comments on the paper; particularly as it refers to a period in the history of medicine in which the doctors were going over from active depletion to active stimulation, and when, of course, there was a certain hesitancy of opinion as to which was right. There was a change in type of the disease, or the constitution of the individual had changed. Which? They were very strong on both sides; one insisting that it was a change in the constitution, and the other that it was a change in the disease. Dr. Purdy in his paper very nicely describes those two conditions. He told you of the value of depletion when the diseases had a sthenic character, and of the opposite course in an opposite character.

This question of diphtheritic croup and diphtheria is one about which I might say much, very much; because, of all the affections

of which either children or grown people are the subjects, I do not think there is any one of them so little understood. I believe it is misrepresented, and has been from its early history. Commonly it is looked upon as a local disease. It is unquestionably a general poison, manifesting itself in the throat; but before that has already invaded the whole frame. I am in a better position to state this than most people. I have had it myself, and from the way in which I got it I can not question the real septic nature of the infection from the beginning.

In regard to the treatment of diphtheritic croup, true croup, children under five, I think, always die, I do not care what you give them. The more you swab the throat the more likely they will be to die. I have seen, in a long life, perhaps as much diphtheria as any man of my years. I have seen three instances of children under five years with true croup recover. Only three! It was not from anything I put in their throat, but from nutrition, or their living long enough to eliminate the poison. In the race life distanced the disease.

DR. PETERS.—I never saw but one case recover, and that was under a treatment that might be successful in a second case; I do not know. Pilocarpine was the medicament used.

DR. J. P. GARRISH.—Now, I regard diphtheria as a local disease of the throat, since here the principal violence of the disease is expended. You never have a case of diphtheria except your patient be below par. Therefore, you should begin with stimulants. The best application for the throat I have found to be carbolic acid combined with lime water; I use it as a spray every hour. Then I keep up the liquid food, namely, milk with lime water. I do not discard the chlorate of potassium, though it may be now falling somewhat into disrepute. There is one mode of administration which I advocate; it is this: I take three, four or five grains and mix it thoroughly with fine sugar, and then put the powder on the tongue, where it will soon be dissolved. In this way you get the full effects.

You must see that the room is well ventilated. If any malady requires good air and pure water, diphtheria certainly does. I never give a mercurial in diphtheria. Your patient is already below par, and you only increase the tendency to evil by giving it, but, in true croup, calomel is more than permissible, it is

requisite. My advice is that you apply the spirits of turpentine externally to the larynx. Another, a slice of salt pork, though a domestic remedy, is a very valuable one. When laid on, let it extend from ear to ear, and then put a piece of oiled silk lined with flannel over that.

DR. C. G. POMEROY, of Wayne County.—I have been much interested in this subject, but I do not expect to say anything new to any gentleman who has practiced for the last thirty years in this country. Among other things it reminds me of the singularity of the different methods of treatment all over the world, for I do not suppose that the varied therapy is confined to this country. It seems to me the same difference in opinion existed in France and England since, I think, 1822. May not the diversity of sentiment regarding everything pertaining to it be due to its prevalence in a different degree in different localities? Each one has followed his own course and always been willing to listen to his friends and neighbors; and so, although we have disagreed, we have agreed to disagree.

The attending physician of the first case I was called to see supposed it to be scarlet fever with throat symptoms. He informed me that the child had croup and would die before morning unless tracheotomy was performed. I examined the child's throat, made up my mind that it was diphthéria, for I had been reading the London "*Lancet*," the editors of which had appointed a commission to write up the disease and give their opinions in regard to treatment. The disease was raging as an epidemic in the English capital at that time. I saw the false membrane, showing to me at a glance that the throat was covered with exudation, and that pieces were still hanging in a detached kind of way. The little fellow was strangling for breath, and I let him lay back against the pillows and then examined again. Retiring into an adjoining room, I said to the other physician, "I am afraid that you do not know your enemy; this boy has diphtheria," and showed him a piece of the membrane. He said, "What shall we do?" I said, "The boy will die. This exudation extends down into the larynx, and I do not feel justified in operating; but I would vomit him." He replied that he had already done this several times with ipecac. I recommended sulphate of zinc, and the child was somewhat relieved, but died in the morning. Within four weeks we had

twenty-two cases. I would remark here, that all the cases we had for six months or a year commenced with a chill and a sharp reaction, so that I gave what in my judgment is appropriate, namely, aconite, in small doses, and in all the cases brushed the throat with nitrate of silver, and from that day to this I have used no other topical application. I never have seen anything that would do so well as that.

REMOVAL OF AN ENTEROLITH. PRESENTATION OF THE SPECIMEN.

By W. B. SABIN, M. D., of Albany County.

Read November 17, 1885.

ON September 1, 1884, my father, Dr. R. H. Sabin, and myself were called to see Miss L., aged thirty-five years, who was pale, thin in flesh—almost a mere skeleton—and looked careworn and weary. She said that she was twice mechanically relieved, years ago, of impacted feces, by the breaking up and removal of the masses; that she had much pain in the rectum, and was in general a great sufferer, but, although she believed that her condition was substantially the same, she would not consent to even a slight digital examination without ether. During the narcosis I found a hard mass about as large as a turkey's egg, not capable of receiving any impression from the finger.

At the appointed time, on the succeeding afternoon, I again administered the ether, of which a very large quantity was used. The operation, which consisted in dilating the sphincter, and crushing the stone with strong forceps, and removing it in pieces, lasted an hour and ten minutes.

An attempt was made to get it away whole, but, on account of the brittle nature of the shell, it broke, which very much facilitated its removal. The mass that was saved weighed four and a half ounces, more than half an ounce having been lost by crumbling. This mass, on close examination, was seen to consist of petrified feces. According to the patient's statements, it must have been forming from fifteen to seventeen years, still it had never given her much trouble until within a few weeks past. She would often take laxative medicines which would produce stools, but she could not say that she had ever felt relieved.

During the practice of my father, a period of twenty-eight years, he has met with five or six cases of hardened and impacted fæces, which required the use of the finger and scoop for removal, and twice has he found impaction of walnut shells in the rectum, which it was necessary to remove piece by piece, but never before had he seen petrification.

On searching for recorded cases, I find two, but those originated in foreign bodies lodged in the rectum, which served as nuclei around which the deposits formed. One case was where an insane patient swallowed a mass of hair, which formed a hard mass, and was subsequently removed.

Our patient was of a peculiar constitution. When a child she fell forward from a chair with her hands spread out in front of her, and when taken up the skin peeled from both hands like a glove. Efforts were made to keep the fingers straight during their healing, but in vain; they contracted till the hands were tightly shut, and a skin formed over them just as a mitten is drawn over the shut hand, making complete stubs of them both. Her skin is so delicate that when her knee strikes a chair or other object it either discolors or the tissue breaks down. She has three sisters, two of whom are healthy-looking women; the other partakes somewhat of this one's nature, having similarly contracted hands, but not in so pronounced a degree.

All of them are maiden ladies.

I had this specimen of stone analyzed, since I read the paper in Albany, by Professor W. P. Mason, M. D., of the Rensselaer Polytechnic Institute. He reports its composition as follows:

Organic matter.

Phosphate of lime.

Phosphate of magnesia.

Carbonate of lime.

Sulphate of lime (very small).

Silica (a trace).

The main constituent is phosphate of lime.

COMMERCIAL PRESCRIPTIONS.

By HENRY C. VAN ZANDT, M. D., of Schenectady County.

Read November 18th, 1886.

IN this era of rapid changes in creeds and practices, it is not to be expected that our art should escape. Yet, is change progress? Is there nought in antiquity worthy of reverence? Is all that belongs to the past false and specious? These are questions which can not be categorically answered. Systems that have grown hoary with years, and that have been perpetuated by tradition, have been ruthlessly swept away. They have yielded to the revolution; and with new leaders have come new policies. In some instances the change has been for the better, not always. With progress has also come corruption with its mask of cant.

There was a time, and not so long ago at that, when physicians bought their drugs in the most reliable markets, and, content with their purity, compounded their own prescriptions with care. They knew what their patients were taking, and regarded the "Dispensatory" as all sufficient for their purpose; but now enterprising firms bring to their very doors not only simples, but conglomerates, studied out by themselves during the hours robbed from sleep! Manufacturing chemists, wholesale druggists, and medicine peddlers, now considerably relieve the physician from the anxieties of mental effort. They deal no longer in secret remedies, but print their formulas upon the label; their remedies may be new, and indorsed by the unwary practitioner, who has written to a journal, but somehow, through bungling, so it is said, they have not succeeded in *your* hands. Thus, too, it has come to pass that the practitioner, with an unaccountable credulity, has adopted all the ready-made prescrip-

tions without a question. He has surrendered his right to think for himself, and become a routinist, as plastic in the hands of a dogmatic compounder as the potter's clay. Once the "Pharmacopœia" was respected, but now every manufacturing chemist has his list of copyrighted specialties, which are so many appeals to indolence. Those who question the propriety of their course are only "old fogies," who do not keep abreast with the times.

I do not refer to the pronounced "patent medicines" as such, with the secret formulas, which are beneath the regard of the profession, but to the innumerable commercial compounds, whose real inspiration is the greed of gain. These are vaunted in every medical periodical, sampled at every convention, indorsed by nearly every clergyman, thrust into every office, and glorified in the ritual of every drummer. These, too, I regret to say, have been fortified by many of the regular profession, who have been duped into lending their signatures, with a vague hope of a cheap notoriety. It would be hardly fair to call them nostrums, because they may have some merit, and because some have been resurrected from the past, while others are combinations of well-known remedies. The bulk of them, however, will never be known to the profession through any legitimate channel. The directions for use are so exceedingly explicit, and the virtues so pronounced, that the sale of the compound or extract is not long limited by the prescription, but soon finds its way into the hands of the public. Everything in animal, vegetable, or mineral kingdom is laid under contribution; after concoction, bottling, and labeling with full directions for use, the product is dubbed "The best narcotic in the world," "A most excellent diuretic," "A gripeless cathartic," "A most powerful alterative," and what not—destined to be spread as far and wide as money, printers' ink, business zeal, and mercantile enterprise can carry it.

Now, what are the arguments urged in favor of these ready-made compounds? Forsooth, they are elegantly put up, they are more agreeable, they have greater uniformity, more accuracy of dose, more purity, and they are to be introduced only through the medium of the profession—besides, but few apothecaries have the requisite facilities in the way of machinery or appa-

ratus, and indeed, by insinuation, if not by direct statement, but few have the necessary knowledge! Are not all these plausible and specious appeals? Every physician of average intelligence—and this average is not by any means low—knows that these are *ad captandum* statements. These arguments, I admit, may have some force with those who may be biased by complaints of patients regarding nauseating doses, especially in these days of tasteless triturations; but elegance of combination is not all, when it is incompatible with utility. All should be able to write for essential medicines in formulas just as pleasant, and certainly just as compatible with the effects to be produced. The claim that there is greater uniformity of dose may have some influence upon young men without trust in their own knowledge, or upon old men accustomed to the artillery dose-table, but certainly should not with the wide-awake practitioner who knows the untrustworthiness of many of the ancient Galenical remedies, and is competent enough to be governed by the circumstances of the case or the idiosyncrasies of the individual. How well founded may be the other claim, of accuracy of dose, I need not discuss at length. It is well enough to bear in mind that the single mistake of an apothecary can only affect a single case, and is in no wise to be compared to the results of an error occurring in a large manufactory, in which a number of boys, girls, and other generally irresponsible parties are employed. Let us reflect that a large amount of material is disposed of to be scattered over a large extent of territory in different parts of the world. As to purity of compound, the very suspicious claim made by each enterprising advocate of his own wares, that no short weight, substitution, or impure ingredient is tolerated in his establishment, begets the inference that such a condition of affairs prevails in the others. Our apothecaries, now subjected as they are to preliminary examinations before competent boards, should be a guarantee that their works will bear inspection. Mayhap the claim that these elixirs—I use the term in a generic sense—are introduced through the medium of the profession is but too true. For statistics, collated as bearing upon this assertion, show that in the cities of New York and Brook-

lyn about ten or twelve per cent. of prescriptions call for some proprietary or manufactured medicine, while outside of these cities the percentage is somewhat larger.

Now, of what use is the multiplication of these half-quack additions to the *materia medica*? What can be learned by experimentation with articles suggested by parties ignorant of all medical laws, and virtually outside of the profession? Are they really investigatory procedures of value? Do they not partake of the nature of letters sent by the laity to the medical attendants of public men? These questions are to be answered by ourselves, and, in answering them, we can not ignore their tendency to the grosser forms of charlatanism.

These preparations, not nominally but essentially "patent medicines," are exclusive, notwithstanding the printed formulas. They might be employed by those who advocate the right to the individual profits upon one's own findings, certainly not as a contribution toward the relief of suffering humanity. I do not mean to denounce the "new remedies" as such, when brought out in a legitimate way, after a careful test by competent parties, with other motives than those of mercenary gain. Without appearing invidious, may I not mention the name of Dr. Squibb, whose efforts in this direction are appreciated throughout the land. He says, in speaking of those physicians who encourage the use of these commercial prescriptions, that "they are so dissatisfied with their own knowledge, or skill, or with the results of their application of them, that they are in restless search for new drugs, which are to be tried in order to find specifics. The therapeutic knowledge of this part of the profession is accepted from the ingenious and plausible drummer, who leaves it with his samples for trial, or from the flood of advertising matter, statements, certificates and cases published in this interest. In this spirit of empiricism, everything seems worthy of a trial; or rather the only reasoning that is accepted is that everything should be tried, in order that there be no risk of missing a valuable agent. To this class, nothing seems absurd, nothing incredible, and it therefore becomes an easy prey to mercantile enterprise."

There certainly can be no need of my pointing out the folly of prescribing for diseased action by name, as though there were distinct entities to be combated by their antagonized specifics. This may have been the faith of man in an infantine condition of development, and as such may be current even now in the traditional expression that "for every disease there is a remedy," but, to the conscientious student of his art, all such delusions are not worth a moiety of attention. There certainly can be no need of experimentation on the part of outside parties in our uncertain science. Ready-made prescriptions are very like to ready-made clothes, once in a while you may strike a fit, but even then defects in workmanship and material are disagreeably prominent. In the language of the Code of the American Medical Association, may I not quote one of its provisions in the form of a question, whether our inconsiderate habit in this respect is not "derogatory to the dignity of our profession"? Let me at least raise the finger of caution.

DISCUSSION.

DR. SMITH BAKER, of Oneida County.—I regret very much that the gentleman has omitted from his paper the point that seems to me the most important. It does not seem to me to be material whether we accept or reject the prepared prescriptions. There may be times when we can use them without detriment to anybody, but there is this point that we must remember, that all accurate medical work depends on accurate diagnosis of the indications of the case, and then knowing how to meet these indications. The trouble I find with reference to these prepared prescriptions lies somewhat in this direction, that we make our diagnosis loosely and prescribe loosely. Here is something that tastes well, and is too readily prescribed. The effect upon the practitioner himself, in many instances, is perhaps worse than the effect upon his patients. It leads him to looseness also in mental work.

DR. DARWIN COLVIN, of Wayne County.—Previous to ten

years ago, a visit from a drummer was not in our experience. The apothecary used to be the sole and exclusive victim, but he disposed of the voluble advocate by saying that the article would be unsalable unless he could interest the doctors in it. So the indefatigable agent betakes him to the medico, and tells him that "these preparations are to be exclusively in the hands of the physicians—they are not to be sold except on prescription. Now," says he, "I have just come from druggist So-and-so, and he says you are the most prominent physician here. We want the interest and sympathy and aid of *the* physician of the village." Possibly he may say: "We make up a very pretty sample case, and would gladly present it to any physician of eminence" (the sly dog!). "Will you kindly accept?" All the time you are regarded with a mixed feeling of love and awe. Your druggist buys through the influence of a line of recommendation from you, and your fickle admirer tells the people that Dr. — says that it is a capital article, and that it would be to the advantage of all to buy it by the pound. If you will only do as has been suggested, tell these gentlemen to leave your offices, you will strike a good blow.

DR. GARRISH, of New York County.—I regret that Dr. Van Zandt forgot our editors of the medical press. I have appealed to them not to take their advertisements—not to countenance these men; but we have nearly all the professors in the medical schools attaching their names to these things, and ringing the changes on the eulogies. I believe their object is more to bring their names before the public than the good they can do the profession. The proprietors of these articles die worth their millions, while we die poor—just as we always delight to do.

PROPHYLAXIS.

By ISAAC DE ZOUCHE, M. D., of Fulton County.

Read November 18, 1885.

THE art of preventing, or circumventing, disease, though of more recent origin than the art of healing, is destined, as I believe, to take rank with it, and confer benefits on humanity at least equal to those conferred by the elder art.

The advances that have been and are being made in "medicinal therapeutics" are little less than miraculous, and command the admiration of the thinking world; but the prerequisite of healing is the actual existence of disease—a lost sanitary balance which the therapist strives, often successfully, to restore. It is the mission of prophylaxis to make life better worth living, by preserving intact this sanitary balance, thus forestalling disease and suffering, and measurably lessening the labor of those whose business it is to "cure."

To what extent can prophylaxis fulfill its mission? Unfortunately it can not begin at the beginning, and is therefore placed at a disadvantage; its sphere of usefulness contracted by limiting conditions wholly or in part at variance with the object of its mission. If family history could be reconstructed, so that the living representatives of the race should have inherited sound minds in sound bodies, what a field there would be for prophylaxis to work in! If ancestors could be selected with special reference to physical perfection and ennobling characteristics, so that we could recognize in their descendants the "survival of the fittest," what a well-developed, physiological and intelligent aggregation of human beings the world would consist of, and how little need there would be for specific prophylactics!

As we look abroad now, we recognize that some are born apparently without a blemish in body or mind, but the proportion of these is not very large. A much larger proportion enter life with hereditary taint, doomed from birth to carry about in their own persons the ineffaceable evidence of a pathological origin.

The circumstances preceding and surrounding our first appearance on the stage of life we have no control over. Inherited diatheses we can not choose but accept, and these are potent factors in the problem we would solve in discussing prophylaxis. In the remote past, while hygiene was still in the formative stage, influences were at work, and seeds sown, which are bearing fruit in the sanitary condition of the world of to-day. On the whole, the past has bequeathed to us a heavy burden in a race which, if not deteriorated, is very much out of harmony with the laws of its being.

How can disease be prevented in a world that is one vast hot-bed of pathology? Diseases exist in so many forms, a mere catalogue of their names would fill a goodly volume. They keep well abreast of civilization, and, indeed, civilization itself is charged with having introduced a long train of diseases peculiar to itself, by way of contribution to the general stock. Far be it from me to assert that true civilization could be a direct source of evil, and yet it is undeniable that in its train are to be found many and grievous evils, just as among the camp-followers of every grand army are to be found the offscouring of the earth.

Doubtless, as Dr. Parkes writes, "if we had a perfect knowledge of the laws of life, and could *practically apply* this knowledge in a perfect system of hygienic rules, *disease would be impossible*. But at present," he goes on to say, "disease exists in a thousand forms, and the human race languishes, and at times almost perishes, under the grievous yoke."

This perfect knowledge of the laws of life has not yet been attained, nor has a perfect system of hygienic rules been formulated; but, even if both had been accomplished, of what avail would they be unless the knowledge be made to extend into all regions where ignorance prevails now, and the hygienic opera-

tor had the power to practically apply his unfailing rules? "When we look around us," again writes Dr. Parkes, "and consider the condition of the world—the abundance of life, its appalling waste; the wonderful contrivances of the animal kingdom, the apparent indifference with which they are trampled under foot; the gift of mind, its awful perversion and alienations; and when especially we note the condition of the human race, and consider what it apparently might be, and what it is; its marvelous endowments and lofty powers; its terrible sufferings and abasement; its capacity for happiness, and its cup of sorrow; the boon of glowing health, and the thousand diseases and painful deaths—he must indeed be gifted with sublime endurance or undying faith who can still believe that out of this chaos order can come, or out of this suffering, happiness and health." Such a picture does not present a large margin for bright anticipations, and yet we should not regard the case as utterly hopeless. In any case, it is our duty to strive for and aid in the attainment of more perfect health for mind and body, not doubting that if we sow plenty of good seed some of it will germinate.

When disease actually exists, the tendency to recovery is usually so strongly marked that the "expectant plan" of no treatment is found to answer well in many cases. Nature is fruitful in resources, and is not slow to begin the process of repair when tissues and organs are broken down by disease or injury. The circle of diseases known to be self-limited is gradually widening, and the fact that Nature is ever on the alert to repair damages gives us the impression that the prevention of disease should not be surrounded with insuperable difficulties; nor would it be if good common sense had a stronger hold on the masses. The knowledge of sanitary science is about as general as a knowledge of astronomy, and hence the physician—certainly the country physician—is almost daily called to treat disease in localities and dwellings where disease is surrounded by all the conditions favorable to its development and growth. It seems strange that such a condition of things should occur in the practice of a *country* physician, for *country* is associated in our

minds with uncontaminated air, pure water from limpid streams or crystal fountains, and other things equally conducive to a long, healthy life, and a painless death at a good old age. That is what we look for in the country, but we find very often the habitation so situated that the natural drainage has the house for an objective point; the well and the cesspool on the most friendly terms; the air permeating the dwelling laden with the aroma of refuse matters that have accumulated slowly but surely around the sylvan dwelling in little and big pools, which thriftlessness and ignorance find so easy to keep filled!

When such evidences of the disregard of the most ordinary laws of health are paraded before the physician's eyes and nose, he feels that the sphere of his true mission extends beyond the limits of drug-prescribing, and that he is just as much bound to insist on a due regard being paid to hygiene as to the minor point of taking a teaspoonful three times a day. Whatever tends to lessen the gross amount of disease, or lower the rate of mortality, comes, or should come, within the physician's duties, and he can do a great deal toward both ends by compelling his clients or patients to attach a proper estimate to such simple things as drainage, water supply, pure air, thorough ventilation, good food, and cleanliness, general and special. These are indispensable, whether we desire to retain health not yet frittered away, or recover that which has been lost; in other words, whether we desire to prevent disease, or circumvent disease already existing.

It has been remarked that "in all cases of danger presence of mind is a good thing, but absence of body is still better." The remark, though flippant, is really suggestive of the most efficient prophylactic, namely, the avoidance of conditions which induce or favor disease. A little preventive medicine is worth more than all the new remedies of all the schools.

If we would escape delirium tremens, or any of the diseases that result from the abuse of alcohol, there is only one thing to do. If we would avoid malaria, Asiatic cholera, yellow, scarlet, typhus or typhoid fever, or any disease of an infectious or contagious nature, we must avoid contact with the affected; we

must beware of inhaling the germ-laden air or drinking infected water.

In every house there should be a room so situated that it may be perfectly isolated—preferably on the upper floor—to be used as an infirmary when sickness invades the habitation, thus giving the opportunity to separate the sick from the well, and thus diminish the chances of spreading disease. Evidently prophylaxis in its broadest sense means revolution, or evolution. It means a higher education for the masses, and a much wider diffusion of what is called “common sense” than we find common now. It means earnestness in acquiring and applying to the art of living the scientific knowledge of cause and effect; and it also means amid the mass of the people the virtue to live in obedience to the sanitary laws that such knowledge teaches.

The epidemic of typhoid fever that decimated the mining town of Plymouth, Pa., a few months ago, was an object-lesson in hygiene not to be forgotten. The excreta of one person in typhoid fever was deposited on the frozen bank of a mountain stream. When the thaw came this excrement was washed into the stream, and was conveyed to the reservoirs from which Plymouth drew its chief supply of water. Typhoid soon appeared, and in an incredibly short time became epidemic.

An epidemic could hardly have found a place less prepared to combat it. I do not know of a sanitary law that was not habitually and openly set at defiance by the Plymouth inhabitants, and when their day of trial came they were compelled, as we know, to pay a fearful penalty. The most efficient service by competent physicians was almost powerless to check the ravages of a dread disease occurring in a community so utterly regardless of the most ordinary conditions of health.

The epidemic of small-pox which has been, and still is, devastating Montreal, emphasizes the great need of intelligent Common Councils and efficient Boards of Health in cities whose inhabitants are not all educated in hygiene. It also emphasizes the virtues of vaccination as prophylactic of small-pox—a proceeding which has awakened such determined opposition among

a large class in the stricken city, to the great disadvantage of the whole population.

As expressing my own views on the question of vaccination, I will quote a few lines written by Dr. Derby, of Massachusetts, some four years ago :

“ We may speculate about the possibility of the potency of vaccine being exhausted in the human family ; we may find that people with good vaccine scars sometimes have small-pox ; we may dispute as much as we please about the average period when revaccination may be considered a prudent safeguard ; we may even conjecture that other diseases than that of the cow may be communicated by humanized vaccine ; we may turn the vaccination question with ingenious skill so that its many facts shall reflect a multitude of curious lights, and after all we find that in vaccination we rest in a *security* against the horrid pestilence, unknown to former generations.”

That disease may be modified by the qualities of race there is very little doubt, but I will only detain the Fellows while I allude to one race—the Jewish. Their great hygienic lawgiver, Moses, laid the foundation of a sturdy, long-lived race, when he promulgated his famous health laws, which were many centuries in advance of his time. Statistics show us that no other race so long resists the tendency to death as the Jewish, and probably no other race requires so little drug-medication, or so few services from the physician, except in the single item of obstetrics.

DISCUSSION.

DR. SMITH BAKER, of Oneida County.—It seems to me that it is not so much the fact of prophylaxis as it is the how of prophylaxis. Why is it we have so repeatedly brought before us the general statement of the fact that we need prophylaxis of disease ? How is it that we have so little brought before us concerning the methods of prevention ? It would seem, with all our general statement, there is also a general apathy on the subject. It has

been said that if we tell the masses that a certain well is saturated with poison they will point to it and say "No, indeed ; it is a well of clear, pure water, used by us for these forty years, more or less, and we can not believe it." And thus it is with all the particulars needful for carrying on prophylaxis. The question arises, How is this, and why is this ? The paper has well and timely emphasized the fact that there should be a general and popular education on this very subject. It seems to me equally proper for the profession to take hold of the matter with greater firmness than it ever has done before ; at least that they should be leaders in this direction, and face the enemy with commendable courage.

DR. KNEELAND, of Onondaga County.—As well here as anywhere else, I wish to direct the attention of the Fellows present to the epidemic of typhoid fever which prevailed at Plymouth, Pa., and which was said to have been traceable to the contamination of the water-supply by one case occurring away up on the mountain, above the town. If there is any gentleman present willing to make such an incredible statement as that I would like him to defend his position.

DR. WM. H. THORNTON, of Erie County.—I am just the man the doctor is looking for, and, since this matter is one pertinent to the subject of prophylaxis, I shall crave the indulgence of my auditors while I make a few remarks upon the subject. During the prevalence of this terrible plague the Buffalo Board of Health delegated Dr. A. H. Briggs, the health physician, Dr. J. W. Putnam and myself, to visit Plymouth. Our object was to study the epidemic in all its bearings, hoping to discover some things useful for application to home surroundings in the way of prevention of disease. A very brief summary of our findings is as follows : At the time of our visit there were about eight hundred persons sick with typhoid fever. We visited many of the sick and confirmed this diagnosis. We made a careful inspection of many of the places where the epidemic prevailed, and could find no local cause which in our opinion would account for such an extensive epidemic. We were led, however, to believe that the trouble originated in contamination of the water-supply. The town receives its water from three sources ; namely, from the river, from wells, and from reservoirs supplied by a mountain stream. So far as we were able to learn by careful investigation, all of the first

cases, and in fact nearly all of the patients then ill, were in families supplied with water from this mountain stream. This stream we followed upward as far as the fourth or upper reservoir. During January there had been one case of typhoid fever in the person of a man who, having contracted the disease in Philadelphia, came to reside in a cottage close by this stream and just below the upper reservoir. This place we visited. The attendants of this sick man told us that on some stormy nights some of the stools from the patient, instead of being taken to the privy, were thrown into the snow bank which lay on a steep slope descending directly to the creek. During the winter and up to the last week of March this creek was frozen up, and in consequence the town was temporarily supplied with water from the river. When the warm weather came, during the latter part of March, the melting snow carried these typhoid germs into the stream. Just at this time also the Water Works Company began to draw their supply from the reservoir fed by this creek. Now then, during the early part of April cases of typhoid fever began to break out in the town, and on one day, about the 8th of April, two hundred people were stricken with the disease.

We found two families residing on the banks of the creek, near the lower reservoir. One family drew their supply of water from the stream. During the first week in April one member of the family was taken with typhoid fever, and subsequently the entire family, eight in number, had the disease. The other family, residing not fifty yards distant, drew their water from a spring in their yard—none of this family had the disease.

From these facts, and some others of a similar nature, the Commission were forced to the conclusion that the entire outbreak of the disease was directly traceable to the contamination of the water-supply by the stools of the typhoid fever patient up the side of the mountain. I think this should teach us that, for the sake of prophylaxis, all typhoid stools should be disinfected, and that they should be prevented from entering a source of water-supply in any way or in any form. It would seem also to be a reasonable inference that the typhoid germs are able to multiply themselves in a suitable soil outside of the human body.

ADDRESS ON PATHOLOGY.

By EDWARD G. JANEWAY, M. D., of New York County.

Read November 19, 1885.

THE request for an address upon the subject for which I have been announced would have been a source of pleasure had it not been for the embarrassments imposed upon me by sickness and convalescence. Your committee, however, should be held responsible for my short-comings, inasmuch as they declined to grant my wish for a release from my engagement. Craving your indulgence, therefore, I shall aim to draw your attention briefly to some of the advances made by pathology. These are all the more manifest because of the stationary character of some of our sister professions, notably that of the law, which, with its adherence to precedents, is so content with the usages of the past, and is so afraid of innovations. We are more fortunate in our profession, for, while not eager for change, we are still always seeking for newer information. We are consequently ever and anon changing our belief and practice.

To any observant mind it has long been apparent that we are in the midst of a revolution in medicine, and in no department is this more apparent than in pathology. The older explanations no longer satisfy the demands of the inquirer. Formerly, a large part of the study of the nature of disease was done in the library, and, in consequence, the result was mostly of a theoretical character. Metaphysics has not helped and will not help us in these searches, though, on the contrary, physics has proved of marked service. Need I say that more correct views of pathology must necessarily produce advance in therapeutics? In no part of the field is this more evident than in the effect of the newer views as regards the ætiology of inflamma-

tion upon surgical practice. So long as it was accepted that inflammation was a necessary sequence of injury in some constitutions, and that the formation of abscess, etc., was dependent upon blood states, the surgeon would not and did not adopt the rules which now obtain. But so soon as it was rendered probable that unclean hands and instruments, noxious fluids, and the dressings in vogue, might be the subjects of the penetration of germs from the air, how decided was the change in practice! Moreover, now that belief has been reduced to certainty by Koch, Ogston, Rossenbach, Passet, and others in the vanguard, who have proved the direct relationship between micro-organisms and certain surgical diseases, we have a right to anticipate a still greater triumph of preventive measures as the objectors fall into line or disappear from the field.

In no department has a change of base been more evident than in our views of the nervous system. Twenty years ago our knowledge of diseases belonging to this class was limited to unsatisfactory text-books, and perhaps to a few not much better special works. The student of to-day often looks back regretfully to the meningitis of the past—a comparatively simple matter—as he turns to the subdivisions of the subject which now have added so largely to his labors. Far more does he appreciate the new departure in his attempts at mastering the diseases of the spinal cord. Do we not know that continued research with newer methods has established the spinal nature of several diseases previously considered as functional? A reference to the work of Ollivier, and that of Erb, or Leyden, on diseases of the spinal cord, shows the progress which has been made. Pathology, however, I must grant, has been helped in this matter by the results of physiological experiment, for by these have investigators been taught in what direction to look for changes in disease. Charcot, eminent as a teacher, has, perhaps, done the most in his endeavor to build up the systemic diseases, and explain their phenomena. Notwithstanding his occasional dogmatism, and the fact that schematism is always in danger of overstepping nature, we still owe great praise to him who has done so much to brighten up the obscure nervous affections.

Not long since I heard a distinguished clinician, in alluding to nervous diseases, say that pathological anatomy, or rather knowledge of it, was not of great service in practice. I merely quoted to him Charcot as an illustrious refutation.

It is to the demonstration of the disease, and the effects of the newer methods employed by pathological anatomists, that infantile paralysis has found its place in the group of anterior-horn troubles. This is only one of the class in which the naked eye can see but little change, but the microscope, aided by efficient hardening and proper coloring, establishes the undoubted proofs of disease. The reproach of insufficient knowledge applies to-day chiefly to those maladies in which the lesions are too fine to be detected by our present methods, and in which they disappear after death. How great a help would we not have, could the pathology of congestion and anæmia of the brain and cord be truly demonstrated! I have witnessed several cases illustrating the susceptibility of a given set of symptoms, being referred by two or more competent observers—within too short a time to suppose that any radical difference in the patient's condition had taken place—to exactly opposite conditions of the circulation within the brain or cord. Still, Weigert by his newer coloring methods for the medullated nerve-fibers has introduced a means which has already proved of value. The relation, too, of the nature of the changes in the reflexes from the stomach needs also a careful handling.

So, again, this newer condition, or rather term, lithæmia, needs attention from the pathologist, for it also is becoming the scapegoat for all sorts of irregular nervous conditions and headaches. It has come to be used much like the term malaria, as a mere name to conceal ignorance. Where pathology has not revealed to us the truth we shall stumble, and grope our way in the dim light, or, perchance, in the dark, ever encountering vague and misty forms instead of well-defined entities.

Pathology has in no respect of late made more rapid advances than in the study of the ætiology of infectious diseases. I have already alluded to its influence on surgery. In medicine, I am unable to present any such brilliant showing, because here reason,

in pointing to the certainty of micro-organisms in many of the diseases, has outstripped the microscope, and enjoined the adoption of measures antagonistic to their life. Yet, in the face of the knowledge which has come as a boon to us all, many are as yet indifferent as regards the modes of caring for tuberculosis, one of those diseases for which a germ has been found. Here is an immense field for observation, and for the attainment of great practical results. Pathology has not yet told us of this, nor has it told us of many of the other of these parasites, whether or not they have a habitat outside of the body. Let us suppose that we have learned that the germ of tubercle has been proved to have no other source for continued growth and development than the animal body; then, as a necessary corollary, we may control the elimination of these germs, and by insuring their destruction we may prevent sickness and avert death. The practical side of the newer pathology of the tubercular affections has not proved of such service as in the case of suppuration. From the traditional idea that phthisis is an inflammatory complaint it is difficult to pass to the opinion that it is a transmissible disease, against which precautions ought of right to be taken. Yet it seems to me that we are coming to this. Pathology, in this respect, will explain a state which has puzzled not a few physicians, and for which different explanations have been offered. For a long time it has been known that a resort which has proved of value for phthisical patients in the past parts with some of its reputation. How is this? I would suggest that, under favorable conditions of temperature and soil, the presence of a large number of tubercular patients in a given locality, where no recourse has been had to disinfecting measures, would tend to increase the liability to the contraction of the disease on the part of the susceptible ones.

No doubt all here regard the finding of the tubercle bacillus as one of the crowning merits of Robert Koch. Do we sufficiently take into account the long and diligent study, the careful examination of the different sites of disease, the investigation of the culture methods, and the inoculation followed by tuberculosis in animals, preceding publication? Nay, more, do we adequately

admire the self-restraint in awaiting completed work before publishing? Here there was no haste to secure reputation by any of the usual means. But this might have been expected of the man who had acted much in the same manner in his careful investigation of the bacillus of anthrax. All are too familiar with the history of the bacteriological question, as discussed during the last few years, to render it necessary for me to dwell much upon it; gradually the different diseases are rendering up the secret of the ultimate cause of their existence—a secret which has been concealed for so many centuries. The close resemblance between the germs of tubercle leprosy and syphilis must be familiar to all. This demonstrates how varied may be the pathogenetic power of what seem to be almost alike in physical appearances. They have the property of exciting morbid processes which are often exceedingly chronic in their nature. The germs present in suppurative inflammations, though closely resembling one another in physical appearance, are found after culture to be very different in their behavior in relation to the tissues of the body—some possessing suppuration-exciting properties, which are denied to others. These facts teach us that the only true way is to study carefully all the phenomena of the life-history of a germ before deciding that from close resemblance two should have the same name, or either be given a new one. This is especially true, as was pointed out at last evening's meeting, of the present stage of the contest over the pneumonia germ. Already two other germs have been discovered, as was there pointed out, for which claims have been or may be raised that they are the identical germ. In such controversies there should be no bitterness, but, unfortunately, pathologists are of passions like unto others of the human race, and, as has been the past, so will the future likely be.

There is one aspect to the germ question which, when our knowledge is ripe enough, promises to be of great value. It consists in ascertaining the place of origin of pathogenic germs, and the means by which they have acquired these disease-exciting properties. This has already awakened discussion, but its solution is not at hand. We do know, however, that more

or less virulence may depend upon the soil, temperature, etc., upon which the cultures have been grown. It was at one time supposed that a non-disease-exciting germ might gradually grow into a morbid agent. The pure cultures and inoculations from such have overthrown the idea. I find that not a few entertain the notion that a given germ which, when present in the body, excites a special disease, only exists, so far as nature is concerned, in the body of the victim of the disease. With the solution of this question comes that affecting the *de novo* origin of contagious diseases, which many assume to be an impossibility. This is more especially a matter of dispute so far as typhoid and typhus fever are concerned. I can perhaps frame the question as it has presented itself very frequently before and since the bacillus of typhus was discovered. Does the germ which excites these diseases exist in nature, maintaining and manifesting its life-phases independent entirely of the human body, and only exciting disease in this body as one of the activities with which it is endowed? In other words, are there germs in existence in any locality which have not remotely been derived from some one sick with these diseases, and are only awaiting an opportunity to enter the human body in order to excite the disease for which they supply the vital impetus?

As regards the typhus germ, which, so far as I know, is as yet unrecognized, the answer seems foredoomed to be in the negative, because the very place of its origin would have to be the neighborhood of the human body. Concerning the typhoid germ, I entertain the idea that such a separate method of existence is a possibility. Reasoning from analogy, though seductive, is dangerous, and the question has often presented itself, If the mosquito can live without the human blood why may not some of these our internal pests do the same? In fact, we know from the culture experiments that such a separate life is possible for those which are derived from the human body. If it can be established that typhus fever is, as some claim, at times of spontaneous origin, under circumstances of filth and overcrowding, then we should in all probability meet with a germ which, innocuous, or nearly so, had acquired pathogenic powers of a very de-

cided nature. There is one practical point which I wish to draw from these thoughts, and that is the necessity of continued and careful investigation of disease arising in isolated districts. I have long endeavored to impress upon students about to settle in localities favorable for such practical work the advantages which they have for the study of such questions as relate to the origination of diseases. It was with great pleasure that I read the recent brochure of Dr. Trudeau, of Saranac, in this State, relating his experiments made in the pure air of that region upon animals, to determine the inoculability of the tubercular virus, or bacillus. Too many of our younger physicians are deterred by modesty from making public their observations.

While I am speaking upon the subject of pathology, with kindred topics, I might add that nothing has surprised me more than the infrequency of autopsies in the smaller cities and in country districts. The physician is too often apt to imagine a post-mortem examination unattainable, and does not urge it with sufficient force. I have known not a few people to express regret that none had been obtained where some doubt existed as to the cause of death. I admit that it is very annoying to have it said that, "if you can learn anything," or "if you do not know what the patient died of, it is permissible." In this connection I recall an experience of mine at one of the German universities situated in a rural district. I noticed that the post-mortem room was next to the chapel. I expressed surprise, but was informed that the people from the neighborhood could have the use of the chapel free of expense, providing an autopsy were allowed upon the deceased.

To return from this digression into which I have been led to the subject of germs. There are several important questions awaiting solution at the hands, or rather from the minds, of the pathologist. How far is it possible to go in the path which Professor Pasteur has opened in his studies upon anthrax and hydrophobia? This subject of attenuated virus is one of the most important in preventive medicine. I do not propose to enter into any discussion as to the desirability of inoculating dogs for hydrophobia, but if it is possible, as has been claimed,

that a person may be bitten by a rabid animal, and then be spared, by inoculation with increasing strength of virus, from an attack of rabies, what an immense field opens before us for other diseases. The account which met my eye did not state whether any cauterization had been applied to the wounds in order to prevent the disease. In this direction, then, of endeavoring to ascertain if it is practicable to grow the germs of our more malignant diseases outside the body, upon some soil which shall mitigate the effect, and so obtain a quality of virus which will give a mitigated attack. Here is a great work for an earnest student of pathology. As regards the recent work of Pasteur, it is somewhat at variance with what I observed some years ago when studying the question of prevention of variola. It is usually supposed that vaccination after exposure to variola will, providing it is performed within three days, protect, but the general law seemed to be that the taking of the vaccination was delayed, but that the person might have a mitigated attack. Of course, this was only learned from the exceptions, but these were not infrequent. The inoculations performed for cholera have been made in a manner to throw discredit for some time upon the subject. The growth of vaccine virus as at present conducted on numbers of calves, raises the hope that some one may hit upon an animal and a method by which we may obtain an attenuated scarlet fever virus.

As you have watched the growth and development of the germ theory in disease, and of the practical limitation of the discoveries to Germany (with the exception of Pasteur's work), it has no doubt crossed your minds, Why has not America taken her part in this matter? Any reproach to which America might be subjected in this matter would apply to England, Ogston excepted. The advance of Germany in all questions relating to pathology is tied up to and is a part of her university system. She has been especially generous of late to medical institutions, as a visit to any university town will show; take, for example, Strasburg, Heidelberg, Halle, and Leipsic. It is a matter of surprise when one sees edifices which with us would constitute a college building—and the same fact is in the main true of Lon-

don—devoted to the service of one of the branches of medicine, as, for example, pathological anatomy. So the government also pays a salary to the professor; and once appointed, as I understand, he holds the position for life. The whole plan is to induce the younger men to work with the view of winning a professorship. When it is remembered that the expenses of management are also provided for, it is no longer a surprise that the greater part of the discoveries should occur under a government which does so much for the encouragement of medical science. Of late we have had, in Mr. Carnegie and Mr. Vanderbilt, illustrations of the tendency of private munificence to correct all this, and it is only in this way that America can hope to compete with Germany.

Another matter is of more importance as touches the spread of the study of pathology, and that relates to the expense of apparatus and materials. The duty placed by the government upon these articles is in a measure blood-money. The cost of microscopes and accessories is nearly double that which rules in Germany. Where is the harm of admitting all scientific apparatus free of duty? It is of more practical importance for the people that every physician should be supplied with scientific instruments aiming to give more accurate views of disease. Books, too, upon medical subjects, and particularly upon scientific matters appertaining to medicine, should also be admitted free of duty. I trust to see the day when this shall happen, in the interest of the younger, and generally, at the same time, poorer members of the profession.

Before leaving the subject of germs, one of the recent discoveries has been to me of considerable interest. This consists in finding that a variety of tetanus could be excited in mice by injecting garden earth as for the excitation of septicæmia. Nicolai found a bacillus was concerned which, when cultured, still produced tetanus when inoculated. No necessary connection exists between the tetanus of the one and the other, but none will deny that, if it should be established that one variety was dependent upon bacteria, there would be a certain right to argue in favor of the other. So also of late there has been a growing

tendency in some quarters to ascribe the development of malignant tumors to the diseases of bacterial origin. There are some points involved in their growth and development, but more particularly in connection with their dissemination—or, as is sometimes said, with their metastasis—which look in this direction. But this is the least proved of the hypotheses, and, at first presentation, is a surprise, but, when carefully considered, shows a certain number of facts which warrant at least a careful study.

The growth of pathological anatomy and the increased interest in its study are shown by the number of books published. In German, Ziegler, Orth, and Klebs are the more recent productions, with a number of works bearing upon special subjects. Coats, Green, Woodward, a translation of Ziegler, and of Cornil and Ranvier reproduced in English, besides Rindfleisch on "Pathological Histology." In addition to the English works, Drs. Delafield and Prudden have published an American work upon the subject. Moreover, in the United States and in England the publication of the "Pathological Society Transactions" of New York, Philadelphia, and London, confirms the opinion of an advancing desire for information derived from a source that is infallible. The publication of this latter society of late years is worthy of great commendation.

It is not alone in nervous diseases that pathology has offered a new explanation for old facts, but as the result of anatomical investigations we have had new diseases added. The investigations of Isvel and Ponfick established the existence of human actinomycosis, and its capacity for simulating abscesses, not only in the cervical and maxillary, but in the lumbar and abdominal regions also. I know of no authenticated case of this disease having occurred in this city. So, also, within a short time, myxœdema has been added.

The subject of cirrhosis of the liver, which seemed simple, has been divided into the ordinary and the hypertrophic varieties. The investigation of the anæmias likewise opens up a promising field by the pathologist. We now divide these into simple anæmia, leucocythæmia, pseudo leukæmia, and perni-

cious anæmia. An explanation for many cases of simple anæmia is sufficiently easy, but the other members of the group are far more difficult of solution; in fact, to make a fair statement, I have met with no satisfactory explanation of the facts in leucocythæmia and in uncomplicated cases of pernicious anæmia. I say uncomplicated cases, because certain are as readily explainable as the simple anæmias, a lack of proper production of the materials of nutrition of the blood-globules, from failure of the stomach tubules (Professor Flint), or of abstraction of blood from the presence of *anchylostoma duodenale* in the intestine, as has been demonstrated in certain cases, explains the condition in those instances. He who will find the clue by which the transformation of white into red globules occurs will achieve an enviable reputation, as will he who will demonstrate the cause for the non-development of the red globules in pernicious anæmia. Attempts have been made of late to show that the red globules are no longer to be considered as derivatives of the white, but that they are formed independently of these, from the so-called hæmatoblasts of Hayem, which are known in Germany as *Blutplättchen*. Moreover, the question is being raised, in how far thrombotic occurrences are dependent upon these bodies rather than upon the white blood-globules. The gradually changing view about these matters will before long reach a point at which we shall become informed of much that is now doubtful. The works of Bizzozero, Lowit, Hayem, and Eberth more especially promise to throw new light on the matter and manner of the formation of the red blood-globules.

I have endeavored thus to throw together these ideas in the hope that they might perhaps excite thought, but you have listened in the last few days to so many papers that I have no doubt the brevity of mine will be a relief.

REMARKS.

Dr. E. M. MOORE, of Monroe County.—I know these addresses are not open for discussion, but I would like to simply confirm a remark Dr. Janeway made of the peculiar prophylactic power of vaccination where there had been exposure to small-pox ; and also to confirm his own suspicion that three days is too long.

During the war we had an outbreak of small-pox in St. Mary's Hospital, in Rochester. It came suddenly, and we removed the patients as rapidly as possible, but there were still some in the ward. A young recruit nineteen years old, unprotected by vaccination, was out on leave of absence, and not knowing his whereabouts, we were unable to warn him not to return, for he was due that day. Thus it was that late in the evening he slipped into his bed without our knowledge. Therefore, he was exposed during that night to the contagion of small-pox. In the morning I saw him, and about ten o'clock I introduced some bovine matter into his arm and it took beautifully—I think I put in three points, to make assurance doubly sure. Well, he had just about fifty small-pox pustules over his body. So then, you see, he was exposed these few hours—say about sixteen—and it was just time enough for the variola to come in ahead.

A CASE OF POISONING BY TWO GRAINS OF STRYCHNIA. TREATMENT BY CHLORAL HYDRATE AND COFFEE.

By WILLIAM FITCH, M. D., of Tompkins County.

Read November 19, 1885.

I WAS called April 1, 1881, at 11.30 P. M., to visit Mrs. —, aged thirty. The messenger said that she had taken poison, but was ignorant of its character. After a short delay caused by procuring antidotes for arsenic, opium, and strychnia, I arrived at the house of my patient, which was about a distance of seventy rods from my office. I found her in a quiet frame of mind, although she said that she had taken two grains of strychnine in milk with suicidal intent. I was informed also that prior to my coming she had been seized by three or four convulsions. I immediately dissolved twenty grains of chloral hydrate in sugar and water, and ordered strong coffee with sugar and cream. Before I could administer the chloral she had tetanic convulsions of greater severity, so I was told, than any before. Her breathing was now stridulous, and she became pulseless at the wrist. Life seemed to be suspended for a short time, but she soon gasped for breath, and pulsation became perceptible. After having sufficiently rallied to take the chloral hydrate, she, within twenty minutes afterward, had another paroxysm, but it was much mitigated in severity. I then gave twenty grains of chloral in the same manner as before, followed with three or four ounces of the strong coffee. A third paroxysm ensued in twenty-five minutes thereafter, and I followed it up with twenty more grains of the chloral and another dose of coffee. A manifest improvement was soon observed, in the less rigid condition of the body generally. The fourth convulsion, which followed within twenty-five minutes, was of shorter duration and less severity. The same treatment was continued. It

now being 1.20 A. M., and while about repairing to my office to replenish my stock of chloral, she begged me not to leave, but after a full explanation she consented. Immediately after I returned she had tetanic convulsions, though of much less severity than before. I now administered thirty grains chloral again with coffee. About 2 A. M. my patient requested that the attendants leave, as closing of doors, coughing or sneezing might bring on a return of the spasms. At 3.30 A. M. she had a slight paroxysm, again of short duration. I administered thirty grains of chloral, in the same manner as before, with the best result, for the spasms returned no more. Three and a half hours after the first dose of chloral all symptoms of poison had disappeared, so that my patient slept most of the time until 7 A. M. She made a rapid recovery, experiencing not much annoyance except the muscular soreness usual to such violent contractions. I gave my patient, it will be noticed, about one hundred and forty grains of chloral hydrate in four hours, and with the most gratifying results.

Since I commenced using chloral hydrate in my practice, which was in 1870, to avoid the acrid taste and gastric irritation, which often cause vomiting, I have given it largely diluted in sugar and water, followed with coffee, if obtainable, or milk, when the patient has not taken food in three or four hours. Vomiting, I have found, seldom occurs if coffee is given immediately after the chloral.

Dr. Thomas Stevenson says, if convulsions have already set in, the use of the stomach-pump is out of the question. An emetic of warm water, with mustard or carbonate of ammonia, should be given without a moment's delay, followed by large doses of bromide of potassium; even half an ounce in one dose has been given.

In the case which I have just related, emetics would have lost valuable time for my patient, as she had taken no food since early in the morning, and the poison would have destroyed her before the antidote had produced any effect.

Also, as bearing upon the case in question, I may refer to one reported in the "Medical News," of Philadelphia, February, 1873, which is as follows:

"Dr. S. S. Turner, of Grand River, Dakota, was called at noon to see L——, age forty, who was reported to have been poisoned with strychnia by his wife. All the symptoms ascribed to poisoning by strychnia were present and well marked; quantity given unknown. Gave chloral, thirty grains; in about thirty minutes there was marked abatement in the severity of the convulsions, and improvement in vision. In thirty minutes more a violent convulsion ensued, and fifteen grains of chloral were given with the effect, in a short time, of inducing freedom from convulsions, which lasted half an hour. Afterward, convulsions again returning, he gave chloral thirty grains. Relief followed quickly, and the patient remained tranquil three hours, when, slight spasms recurring, another dose, thirty grains, was administered. No further convulsions occurred. The patient slept all night, and the following day complained of muscular soreness."

In the above case, Dr. Turner gave one hundred and five grains of chloral hydrate in four hours with satisfactory results.

These doses of chloral may seem excessive, but "Dr. Joseph R. Beck records ('St. Louis Medical and Surgical Journal,' 1872) a case of traumatic tetanus in a railroad employé, to whom he gave chloral hydrate in doses of sixty grains every half hour, until seven doses were taken, when he fell asleep and slept for thirty hours without moving. When seen by Dr. B——, half an hour after he awoke, he said he felt as well as ever, with the exception of muscular soreness. He had no subsequent spasm, and no further treatment. The effects of the chloral were *nil*; the wounds healed rapidly. He took four hundred and twenty grains of chloral in three and a half hours."

By way of comment I may quote Dr. Kobert,¹ who gives a review of three memoirs of Husemann and others on this subject. The first of these, by Husemann, in collaboration with Krüger, treats of the antagonism of chloral and strychnia. The following are the conclusions arrived at: 1. There is no recipro-

¹ "American Journal of Medical Sciences," April, 1882. Article: "Antidotism," p. 608, from "London Medical Record," Jan. 15, 1882, in which "Schmidt's Jahrb., Jan., 1881, and "Arch. für exper. Pathol. u. Pharmakol.," Band vi, p. 335, Band ix, p. 414, Band x, p. 101, are quoted.

cal antagonism between strychnia and chloral (in the sense that the action of either poison is annihilated by the other). 2. When toxic doses of strychnia and chloral are given simultaneously, the action of the latter predominates, and the symptoms of depression are observed. 3. There is, however, a unilateral antagonism in this sense, that the animals (rabbits) poisoned with strychnia may be saved by a non-toxic quantity of chloral, but yet sufficient to induce profound sleep. A cure may be effected, even when five or six times the fatal dose of strychnia is given; but, beyond this, death supervenes, though this is retarded. 4. Small hypnotic doses of chloral are insufficient to save an animal poisoned by a quantity of strychnia appreciably greater than the fatal dose. 5. Chloral, when employed in sufficient doses, has proved efficacious in the case of men poisoned by strychnia. It is preferable to other counter-poisons, as morphia, Indian hemp, and chloroform, some of which exert their action too tardily; and others, such as curare and potassium bromide, have the defect of leaving the patient conscious, and thus exposed to the moral tortures which assail him. 6. The favorable influence of chloral in acute strychninism can not be explained by direct action upon the parts of the central nervous system, which the strychnia has placed in a state of exaggerated excitability. It may be attributed, in great part, to the lowering by the chloral of the activity of the parts which conduct the excitation to the spinal cord. It thus prevents the too frequent repetition of tetanic spasms, and diminishes the danger of death which they involve. In nearly every case, the duration and intensity of the attacks have been notably diminished. 7. In the treatment of strychnia poisoning by large doses of chloral, a considerable diminution of the frequency of the respiratory movements is constantly observed; on the cessation of such attack, nevertheless, the respiration is accelerated. There is thus a diminution of the normal temperature.

The other propositions of the article refer mainly to chloral poisoning, and the ground is taken that strychnia can not be employed in such cases as an antidote.

"Husemann," continues the article, "has sought to render

chloral more efficacious in strychnia intoxication by combining it with some other tetanic medicament. In conjunction with Hessling, he has employed first a mixture of chloral and potassium bromide, which has been vaunted by Bivine. This mixture is less efficacious than chloral alone. The bromide alone does not prevent, but only retards the convulsions." . . . Husemann's researches may thus be summarized from a practical point of view. "In strychnia-poisoning, neither potassium bromide, nor physostigmine, nor alcohol should be employed; chloral should be given unmixed with other medicaments."

A CASE OF GALL-STONES, PATENT AND CONCEALED, EXPLORATORY LAPAROTOMY WITH AUTOPSY TEN WEEKS LATER.

By WILLIAM WOTKYNs SEYMOUR, M. D., of Rensselaer County.

Read November 19, 1885.

B. H., widow, a native of Ireland, aged fifty-six years, for over a year before I first saw her, which was on the 26th of May, 1885, had suffered most of the time severe pain referable to the epigastrium. This pain, which lasted from a few days to several weeks, was commonly accompanied by vomiting, and frequently attended or followed by jaundice of varying degree. She had been in the hands of several physicians, without any benefit from the round of remedies aimed at gall-stones. Three months before my visit she had passed two gall-stones, the size of beech-nuts, after pain persisting for several weeks. Both during this attack and up to the time of my visit she had been intensely jaundiced. During this interval the pain had brought her to an extreme degree of emaciation and debility. The most striking feature that presented itself at my visit was this intense jaundice; the skin and conjunctivæ being like burnished brass. Her mind was clear and unusually strong. Anorexia was marked, vomiting frequent, pain constant. The tongue was smooth, red, and shining. Pulse weak and 48; temperature, 101°. Heart and lungs, normal. The epigastrium was exquisitely tender, but the liver's edge less so. The liver itself was not enlarged, and the gall-bladder was not palpable to the touch. Other abdominal organs apparently normal. Urine, 1020; dark brown in color, staining the linen yellow. No albumen, sugar or casts. Bowels obstinately constipated and motions dry, white, and chalky, with a very offensive but not faecal odor. Diagnosis: Obstruction of gall-passages, either by inflammatory occlusion or impaction of calculus, with possibly a com-

plication by malignant disease. In view of the failure of medical means I advised an exploratory incision, and then resort to whatever might seem best under the conditions found.

Although the present enlargement of the gall-bladder pointed to obstruction at or above the cystic duct, I hoped that an exploratory incision would disclose an impacted calculus or calculi, capable of being removed by incising the gall-bladder and then establishing a temporary fistula, or that the concretions might be crushed *in situ*, both of which operations Mr. Tait has successfully performed. After having the patient under observation and finding her surely failing, I proceeded, June 16th, to make an exploratory incision with the usual aseptic precautions. The room was divested of hangings, carpets, and furniture, well washed, and exposed twenty-four hours to bromine fumes. All present were required to wear fresh clothing; to use nail brush on hands and arms, and bathe them in bichloride of mercury solution 1-1,000. The abdomen was washed with ether and bichloride solution. The incision, five inches long, from the junction of the right eighth rib with its cartilage downward parallel to the border of the right rectus muscle, permitted the introduction of the hand into the abdomen. All tissues were bile-stained. The gall-bladder lay directly under the upper end of the incision, was empty and had the feel of a finger of a wet kid glove. The left lobe of the liver was extremely soft and inelastic; the right lobe was bony, hard, and a nodule continuous with its structure, and the size of a hen's egg, enveloped the cystic and hepatic ducts. Believing the obstruction was due to malignant disease, the abdomen was closed. After the operation at no time was there pain or vomiting. Pulse and temperature ranged from 100° to 101° before the operation. The skin cleared to the palest possible yellow during the succeeding fortnight. But the constipation and stools remained the same. The wound, after considerable suppuration, healed in two weeks after the operation. Four weeks later the color again began to deepen to a dusky olive, and a week before death the mind began to fail. Death resulted fifty-three days after operation.

The autopsy, eighteen hours after death: emaciation extreme, skin and conjunctivæ dirty olive-green. An incision

was made from ensiform cartilage to pubes, and transverse incisions along the margins of the ribs. There were some slight adhesions between the upper portion of the cicatrix and the liver margin. On the upper margin of the liver, over the fissure of the gall-bladder, there was a crescentic patch of cancerous matter. The liver, stomach, duodenum, and part of the pancreas were removed in one mass, so as to permit of careful dissection. The gall-bladder was empty; the common duct was impervious, and the junction of the cystic and hepatic ducts was enveloped in a hard mass, the size of a hen's egg, and continuous with the right lobe of the liver. Cutting through the mass from the gall-bladder, the hepatic duct was found enormously dilated and filled with gall-stones the size of beech-nuts. An ulcerative opening led from the upper part of the hepatic duct into an abscess cavity, one and a half inch in diameter, in the right lobe of the liver. In this cavity two stones were found. All the gall-ducts of the right lobe were enormously dilated, some to half an inch in diameter, at the surface of the liver. The stones, twenty-six in number, weighed half an ounce Troy. The right lobe was noticeably firmer than the left, and on microscopical examination there appeared to be a marked increase of connective tissue surrounding the ducts. The mass involving the cystic and hepatic ducts was cancerous. The stomach and duodenum were normal, apart from the occlusion of the common duct. The duodenum was filled with a white putty-like, odorless mass. The liver was not weighed, but seemed smaller than normal. The case, apart from surgical procedures, is interesting, as exhibiting the rare pathological condition of gall-stones of large size entirely within the hepatic duct and its tributaries. As a rule the calculous formation in these parts is mere grit, although instances are cited by Cruveilhier,¹ Frerichs,² Harley,³ and others, of large sized stones being found. Whether the stones were formed primarily in the gall-bladder, or in the hepatic duct, I can not decide, although from the condition of the gall-bladder and its duct I am inclined to think they were

¹ Frerichs, "Diseases of the Liver," vol. iii, p. 202, New York, 1879.

² *Ibid.*

³ Harley, "Diseases of Liver," p. 372.

formed in the hepatic duct. Of course, my case was one in which surgery could be of no avail.

It has been my fortune to have had quite a number of obstinate cases of gall-stones under my care, and I have been thoroughly disheartened with the ordinary medical means for their relief. So that I have come to feel that in the cases where repeated attacks make life a torture we ought to incise the gall-bladder and remove the stones, and thus give comfort and health to the patient. The mortality of the operation is low in the hands of careful surgeons, as the results of Mr. Tait, its great advocate, and others, show. The extirpation of the gall-bladder, after Langenbach's method¹ seems to offer no advantage over the simpler operation of incision, besides being a much more difficult operation, which ought in my opinion to be limited to the cases where the gall-bladder is so friable as to render the simple incision and establishment of a fistula hopeless.

¹ "Berliner klin. Wochenschrift," pp. 809-826, 1884.

THE THERAPY OF THE CHLORIDES. ANTISEPSIS A PROMINENT AND IMPORTANT FACTOR IN THEIR MEDICINAL ACTION.

By NELSON L. NORTH, M. D., of Kings County.

Read November 19, 1885.

IN the older medical literature we find much mention made of the words "humors" and "solids," in reference to pathology, and hence "humoralism" and "solidism" are terms well understood. More recently, the theories have combined the humors and solids in pathological reference; all along, the underlying thought of pathologists has seemed to be that disease, whether located in the liquids or solids, was somehow a kind of inherent action or state—a kind of *nature*, or rather second nature, by which a physiological condition assumes easily and by a kind of innate tendency a pathological condition; and hence the popular notion that a "run of fever," or an "attack of small-pox," does one good, "frees the system from evil humors," or from a diseased tendency.

The chemical theory of disease, advocated by some at the present time, while an advance in some respects, is still partially based on the old thought, and must presuppose—especially in the zymotic diseases—some kind of latent yeast or ferment, or a condition that will take on a fermentative process, and so liberate the system from the tendency to or cause of a particular disease.

The germ theory, which is fast superseding all others in the medical thought of the present day, while it is undoubtedly as yet in a crude state, seems certainly to explain better than anything else most of the phenomena of morbid action. It seems most in accord with the Bible, and most in accord with common

sense, that the physiological state of perfection of parts in the animal system is the true and normal condition, and that disease must come from the surroundings, as from the air, earth, water, or food. It greatly simplifies the thought of disease to consider it as the result of a changed physiological process, caused by the development within, or in contact with the vital organisms of extraneous germs; then the treatment which naturally follows is the sterilization or destruction of such germs.

Antisepsis, with this thought, both internal and external, becomes of extreme, of vital, importance—the key to the appropriate treatment of all zymotic diseases, and possibly of all diseases, except those arising from traumatisms and personal excesses and exposures.

It is not an impossible thing that the germ theory may demonstrate what the old physicians wrote and talked so much about, viz., the true proximate cause of disease; and that all the so-called idiopathic diseases may prove to be, to a greater or less extent—according as the germ finds the required conditions for growth or development—zymotic, or communicable diseases.

The word contagion is hardly susceptible of a practical definition. Physicians often try to make a distinction between contagious and infectious maladies, but these definitions are really very indefinite and vague. It must, however, be admitted that there is a difference in the protective power of communicable diseases. As, according to the germ theory, there must be a proper condition of the individual system—an appropriate soil—for the growth or development of the germ, and, as one attack of the disease seems to overcome that condition, as some plants exhaust the soil whereon they grow, so, perhaps, do some communicable diseases, as variola, varicella, rubeola, and scarlatina, become so far protective as that usually the second attack does not follow in the same individual. And, as we have been accustomed to think of these as *the* contagious diseases, it might be convenient, and in accordance with popular notions as well, to use the word *contagion* only with reference to such protective maladies; and to the other forms of communicable diseases, such, for instance, as diphtheria, dysentery, cholera, etc., which

may attack the same person any number of times, the word *infection* might appropriately be applied. Though, of course, the etymology of the word must make its use applicable to all forms of communicable diseases.

Many years ago I had formed the opinion that it was possible to prevent many of the maladies to which it has been said the flesh is heir. I had formed a decided opinion that a large part of the work of the conscientious physician should be the prevention of disease.

It seems particularly desirable—and quite possible—that the class of diseases denominated zymotic should be stamped out by chemically changing, removing, or destroying the morbid material which causes such diseases. This application of antiseptics may be made practically applicable by the use of destructive agents—germicides—both before and after the lodgment of the germ, or materies morbi, within the animal organism.

I had the honor to make a report on the subject of prophylactics in zymotic diseases to the American Medical Association, at the meeting in New Orleans, in May, 1869, in which I spoke of the internal administration of disinfectants or antiseptics, in connection with a more thorough and more systematic external use of the same;¹ referred to the internal administration of the alkaline sulphites in typhoid fever, to chlorine, iodine, and carbolic acid in scarlet fever, and urged the use of some of these remedies in all cases of the acknowledged zymotic diseases, both before and during the attack, especially whenever they assumed in any degree the malignant type. It was proposed that these, or like articles, be administered both to those already sick, and to the well who have been exposed to the contagion; to the sick to prevent further ravages of the poison (or germ development, as we should say now) upon the physiological action—thus curing the disease by removing the cause; and to the well to prevent any action of the poison, and thus check the development of a pathological state. I gave at that time some details of my own use of preventive medicines, and concluded by earnestly recommending that in all contagious, epidemic, or pestilential

¹ See "Transactions of the American Medical Association," 1869, p. 479.

diseases, it be deemed the duty of the medical profession to use all possible efforts to prevent the spread of the same by advising the free use of disinfectants, both internally and externally, and by using all appropriate occasions to educate the people as to their duty and their interests in the matter of isolating and destroying with disinfectants the *materies morbi* of communicable diseases.

The medical student of to-day, or the physician graduated during the last decade, will wonder why I put so much emphasis upon these matters relating to antiseptis, but the student or graduate of thirty or forty years ago—remembering the teaching of the schools and the books at that time, when the “expectant treatment” was so generally advised—will, I think, readily understand me.

The practice of medicine formerly was based and formulated, very largely, upon the results of observation and experience. The practice of medicine now assumes more exactness—more real science. Many therapeutists at present attempt to give the exact *modus operandi* of medicines—to point out the particular nerve or part affected by the article used. We could wish that these attempts partook more of realities and less of theories, for the nearer the practitioner approaches to the precise action of a medicine the more rational and successful will be his treatment. The astute observers of seventy-five and fifty years ago noticed that calomel and other preparations of mercury possessed marked power over what were called biliary diseases, and came naturally to the conclusion that the action of the mercurials was directly upon the liver; therapeutists now say No, and that the supposed action of calomel upon the liver is a mistake—that it only carries off the bile just as any brisk cathartic does. Those same observers of the early part of the century noticed the power of the mercurials over many forms of diseases, and accounted for it in various ways; by some they were supposed to relieve the congestion of the portal system, and by others it was thought that they were especially effective by the removal of diseased and putrefactive matters from the bowels; and nearly all held to the thought that there was exerted somehow a pe-

cular effect upon the morbid process, through their specific action upon the gums and glands, and so in all inflammatory affections especially they pushed the mercurials to ptyalism.

Without attempting detail in this matter, as it would occupy by far too much time, it is sufficient for my purpose, in thus referring to the very great use of the mercurial preparations during the first half of the present century, and the great confidence placed in them by the whole profession, including physicians of the greatest sagacity, to notice in this connection the very reasonable probability that these medicines possess great curative power; and when, again, we consider that a careful examination of the particular diseases in which calomel and the bichloride of mercury especially have been most given, and most advised, by the really eminent men of the near past, there will be shown a list of maladies almost identical with what are now known or believed to be zymotic or communicable diseases—it will, I am sure, be readily conceived that antisepsis is an important factor in the medicinal action and curative power of the mercurial chlorides. It seems more than probable that the potency of these remedies over the most intractable forms of diseased action, and hence their hold upon the confidence of the medical mind of the past, and of the present as well, is due to the antiseptic or disinfectant power of the chlorides, or of the chlorine, in their combination, sterilizing or destroying the disease-producing germ.

In syphilis, for instance, there is no longer any reasonable doubt that the efficacy of the mercurial chlorides rests in their power of sterilizing or destroying the micrococcus, which, it is pretty generally admitted, is the underlying cause of this Protean malady. That the germicidal, or antiseptic power of calomel and corrosive sublimate is effected through the chlorine in the combinations is evident, from the fact that other chlorides are alike efficacious in syphilis; as, for instance, the chloride of gold, and the chloride of platinum, and other like combinations; probably the softening effect of the mercury—especially when the remedy is pushed to ptyalism—assists in the germicidal process by removing, more or less, the surrounding inflammatory

induration, and thus promoting the contact of the chloride with the germ. The present beneficial use of the bichloride solution for gonorrhœal injections is another unmistakable instance of the germicidal or antiseptic power of this chloride. In fact, very many favorable cases recently found in the society reports, and in the journals, attest the positive value of the mercuric chloride in numerous forms of septic diseases, notably diphtheria, scarlatina, etc. The good effects of the bichloride in small repeated doses in dysentery is, beyond a doubt, through antiseptis. Within the near past, and before the introduction of the germ theory, several observing and astute practitioners discovered that small doses of bichloride of mercury, continued for a length of time, produced good results in tubercular phthisis—the practice came with a shock to others, who thought only of the depressing and debilitating effects of the mercurials—but gradually the admission came that this preparation was really tonic in these conditions. The explanation comes in the discovery by Dr. Koch of the bacillus tuberculosis, and the evident germicidal, antiseptic power of the remedy in tuberculous and scrofulous diseases.

It is more than probable that the remedial power of the bichloride of mercury, and the tincture of the chloride of iron, in the so-called Bright's kidney, will, ere long, be susceptible of a like explanation.

According to the theory that is so fast gaining ground, both in this country and abroad, and which was so fully discussed and demonstrated by eminent members of this Association on Tuesday evening last, that pneumonia is an essential fever, caused by specific micro-organisms, it will be easy to believe that the former and present mode of using calomel therein is effective through antiseptis; and that, theoretically, as well as by the experience of many physicians of the past and present generations, we are warranted, in part at least, in answering affirmatively the fourth question of Professor Flint, and in saying that the mild chloride of mercury has the power of "exerting a curative influence" upon lobar pneumonia, both by helping to "shorten its duration," and by "conducting to a favorable termination."

The chloride of ammonium is, in many particulars, analogous in its therapeutical action to the chlorides of mercury, in its cleansing and softening effects upon the mucous surfaces; notably, the bronchial mucous membranes, where it is especially so, and possibly in the same way through the antiseptic and germicidal effects of the chloride upon the inhaled atmospheric germs and poisons. More than likely the average physician (and I mean nothing derogatory), in prescribing this ammoniacal salt, has in mind more its stimulating properties than its alterative and cleansing power, and so fails to observe and profit by its most important medical quality. I have in mind now a case of severe congestive pneumonia in which an eminent professor in one of the New York schools, having been called in consultation, objected to the use of the muriate of ammonia in the case, as not being so "stimulating as the carbonate," and a change was made to the evident disadvantage of the patient. Stillé and Maisch, in the "National Dispensary," say: "The idea which has appeared chiefly to direct its (ammon. chlor.) use in medicine is, that it tends to render all the secretions freer and more abundant, while it at the same time lessens the plasticity of the blood; in other words, that its operation is in some respects analogous to that attributed to mercury." A suggestion here is natural; that in some cases, where certain alterative results are desired, the chloride of ammonium might well be substituted for mercurial chlorides, and so avoid the well-known and dreaded remote constitutional effects of the mercury.

The chloride of sodium is again an important medicament, as well as a physiological necessity, and an indispensable dietary article. No one, I am sure, will deny that the chief characteristic of salt is its preservative, or antiseptic quality. It has been given advantageously in many septic diseases; in cholera Asiatica, particularly, where it has been supposed to act directly upon the cholera poison. Then, too, its almost universal reputation as a pleasant and effective gargle attests its value. When assisted by vinegar—the acetic acid of which no doubt disturbs the chemical attraction and liberates some free chlorine—it is used effectively in catarrhal anginae, diphtheria, scarlatina, etc.

The chlorides of arsenic and zinc are old and well-known external remedies for malignant growths, which are quite possibly germinal in cause, as it is also quite possible that they are local in origin. It is not so heretical to intimate the local origin of cancer now as it used to be. That these chlorides do not act simply as escharotic, when applied to cancerous growths, is shown by their action on the blood-vessels, as described by Bonnet, who remarks that, "when applied as a paste in the neighborhood of large blood-vessels, arteries or veins, its caustic action does not occasion hæmorrhage, but under its influence they contract and shrivel, and only remain as thin, hard, and apparently solid strings."

The chloride of iron, one of the most important articles of the *materia medica*, has already been referred to. I refer to it again to say that, in the early weeks of the modern epidemic of diphtheria, I met that prince among men, the late Dr. Willard Parker, and in my anxiety to get the latest treatment for the then terribly fatal malady, I said, "Doctor, what do you do for diphtheria?" "Keep my patient alive, if I can," was his laconic reply; and that really was the sum of the treatment of the disease eighteen to twenty years ago. And even Dr. Morell Mackenzie¹ says, in a late edition of his work, "the general treatment of diphtheria should be directed toward husbanding and supporting the patient's strength by every available means. . . . The patient's diet must be at once nutritious and digestible; concentrated beef-tea, or beef-tea jelly, milk, and egg-flip, must be regularly given at short intervals; especial attention must be given to feeding during the night. . . . There is often great distaste for food; in other cases swallowing is attended with considerable pain; while, occasionally, everything that is swallowed is immediately rejected. It is, however, the duty of the attendants to secure the nourishment of the patient in spite of every difficulty. There are few cases of diphtheria in which systematic feeding does not constitute the most important part of the medical treatment."

¹ "Diseases of the Pharynx, Larynx, and Trachea," p. 116.

These quotations, while they are authoritative, coming from a writer and teacher of such great prominence, are, nevertheless, to my mind, very like Widow Bedott's prescription for Elder Sniffles's "cold," which was, you remember, to pour down immense doses of "yarb" tea, and to apply the hot hop-and-vinegar bag to his throat "regular" every ten minutes all through the night, and so secure a refreshing night's sleep!

Earnestly, I am inclined to protest against the way of putting this treatment of Dr. Mackenzie; as also against the usual teaching, both in the books and in the schools.

Students are usually told that the indications for treatment in diphtheria, scarlet fever, and allied diseases, are, first, to sustain the patient, then to destroy the effects of the malady—such as, in diphtheria, disinfecting the throat, or dissolving or removing the membrane, etc., etc. Now, with all due respect to the gentleman quoted, and to the eminent writers and teachers in this and other countries, some of whom I have the honor to address to-day, I want to suggest that the first indication, in the treatment of all so-called zymotic diseases, should be an effort to prevent the activity of, and, if possible, to destroy, the germ, or chemical ferment, which is producing the morbid process; remove the cause, and then, if Nature be not competent to remove the effects, assist her with tonics, stimulants and nourishment. Who would think of administering brandy, beef-tea, and egg-flip to a patient suffering from arsenical poison *before* giving an emetic and an antidote?

To better illustrate, let me say that when I am called now to a case of diphtheria I give first the tincture of the chloride of iron, with the chlorate of potassium, adding water, syrup, or elixir of sufficient quantity to make doses appropriate to the age and condition of the patient, and administer every hour or two, or three, according to the needs of the patient. I do not give these medicines simply or mainly for the tonic effect of the iron, nor for the small effect of the chlorate of potassium, as such, but because the acid in the muriated tincture and the chlorate of potassium chemically react and develop free chlorine, chloric acid, etc., and in the moderately small and oft-repeated

doses I have at once the antiseptic and disinfectant effect of this chlorinated mixture, combined with a slightly tonic and astringent medicine, and in most cases neither brandy nor excessive feeding becomes necessary. If the stomach will not bear the iron preparation, I give to small children sulpho-carbolate of sodium, in three to five grain doses, in syrup or glycerine; or, better yet, I may give chlorate of potassium, hydrochloric acid and water, using the old formula of ten grains, a drachm, and a pint, which may be found in the early edition of Watson's "Practice," as recommended by him for scarlatina anginosa. My treatment of diphtheria has become almost a routine, and I don't fear a routine treatment when the result is satisfactory. I conceive that the first thought of the physician, in coming to these diseases, should be to destroy the poison, and in a large number of cases some one of the chlorides will prove the best agent. I think the reports of failure with this mode of treatment of diphtheria and diphtheritic scarlatina arise often from an improper preparation of the medicine, by which the chlorine and the chloric acids are not developed. I have repeatedly found, upon inquiry, that pharmacists often take especial pains to so combine these forms of prescription as to prevent reaction and decomposition—which, of course, from their standpoint, is correct. And, again, perhaps the physician too often has his thought upon the tonic effect of the remedy, and so gives direction to the compounder to be careful to prevent decomposition; or it may be, with the same thought, he directs too large and too infrequent doses. I think much depends upon giving small doses, frequently repeated, with directions to gargle the throat and swallow slowly.

In typhoid fever, perhaps quinine, iodine, or the alkaline sulphites may be preferable to the chlorides, with alcohol in moderate amounts. Still in no case, as it seems to me, ought the stimulant and stuffing system of a few years past to be resorted to, where, as we visit the patient from day to day, we are unable to tell whether he is really suffering—dying, it may be—from the effects of the disease, or from the effects of the pints and quarts of whisky or brandy that are being poured into his

parched and tired stomach. It is an important part of the subject as to how the chlorides act as antiseptics; still to begin upon it will involve a discussion of the whole subject of disinfectants, which can not be entered upon now. I once asked a practical chemist the question, How does salt preserve? I soon found I had given him a hard question. The answer was, in part, that the chlorine does it; but *how* does the chlorine do it? It is well understood, of course, that, in the case of the hypochlorites in contact with organic matter, the liberation of the nascent oxygen and the oxidation of the offending micro-organisms are the modes of destruction. It is also understood that the quantity of developed chlorine, in a specified article of this class, is the measure of its power as a disinfectant; but *how* the disinfection is accomplished seems to be a question. Dr. Sternburg, in his paper on disinfection,¹ says: "The popular idea that the disinfecting power (of an article) is *directly* due to the evolution of chlorine is an error." Still, in administered chlorides, and when chlorine comes in direct contact with the offending micro-organisms, it is at least probable that the well-known attractive power, or affinity, of the chlorine for hydrogen, either directly destroys the germ, or, by substitution, altogether changes its character, and so sterilizes or removes its hurtful propensity.

One thing is certain and encouraging, that the practice of medicine is becoming daily more and more definite and tangible, more simplified; the results of the administration of remedies more confidently looked for—expected—because diseases in their causes and developments are better understood. Careful experimentation and scientific research are delineating more clearly the laws and necessities of life and health, and the nature and causes of the interferences therewith which develop morbid phenomena-disease. Empiricism is not so much a necessity as formerly.

Treatment is not so much an effort to sustain the patient till the crisis is past as it is an effort to destroy the *materies morbi*, and thus relieve the patient from the toils of his enemy.

¹ Wendt, on "Asiatic Cholera," p. 325.

DISCUSSION.

DR. GOVAN.—Do I understand the gentleman as saying that diphtheria may be indefinitely repeated in a patient?

DR. NORTH.—Yes, sir.

DR. SAMUEL PETERS, of Albany County.—The remark I made last night is very applicable, and perhaps some who may have been absent may be interested in having me repeat the substance of it. The reader of this excellent paper says he is not afraid of routine treatment. Neither am I so long as it is successful.

For about one year I have followed one definite line of treatment in diphtheria, and during that time I have met quite a number of cases of this disease. From that time to now I have administered two of the chlorides mentioned by my friend. I almost invariably give one thirtieth of a grain of bichloride of mercury, alternating it every hour with tincture of the chloride of iron. As I said last night, if it will not be considered boastful, I feel proud to say that not one case has died since.

THE TREATMENT OF ABSCESS.

By J. D. RUSHMORE, M. D., of Kings County.

Read November 19, 1885.

THE object of this short paper is to call attention to the usefulness of the curette in the treatment of abscess, and to urge its more frequent employment in suitable cases. Nothing original is claimed in the suggestion, for the procedure has been resorted to many times, no doubt; and so good an authority as Dr. Lewis A. Sayre, in his work on orthopædic surgery, says in his lecture on spondylitis: "If any abscesses be present, they must be fully opened antiseptically at the most dependent part, and their contents abstracted." Although he does not mention the method of evacuation, he certainly does more than incise the wall of the abscess. Other authors may exceptionally advise the same practice, but, so far as the general tendency of practice is concerned, it is to "incise and let out the pus," and to abstain from any manipulation of the walls of the cavity, lest the contusion of the parts should result in lighting up afresh a subsiding inflammation, or rendering acute a chronic one. It is important, at the start, to understand just what we have to deal with in treating an abscess. The old definition of "a circumscribed collection of pus" is in many cases misleading, for the pus is not very accurately circumscribed, nor is pus the only material contained in the cavity. Indeed, where we have pure pus contained in a well-defined cavity, as the pleural cavity, the middle ear, the joint cavities, etc., we use the terms empyæma, suppurative inflammation of the middle ear, suppurative synovitis, and the like, instead of abscess of the pleural cavity, the middle ear, and the joint.

To define an abscess as "a hollow ulcer," as has been done, is a much more exact description of the condition with which

we have to deal; and while abscesses are not so intractable as ulcers in healing, they require, for their best management and most rapid cure, that attention shall be given not only to the evacuation of the fluid contents, but to the broken-down masses of dead tissue, and the condition of the containing wall of tissue surrounding these masses; just as, in the treatment of ulcers, we take into consideration not only the secretions, but the secreting surface, the edges of the ulcer, and the cell-changes that are being carried on in them. It would not, perhaps, be straining the comparison if abscesses were divided into as many varieties as ulcers, instead of making them all either acute or chronic. It is true enough that many acute abscesses contain little besides pus, but is it not also true that sometimes in small, sometimes in very considerable quantity this detritus is present in nearly all abscesses? If present, it acts as a foreign body, and healing can not be secured until after its removal; and it not only delays the cure by interfering with repair, but renders the patient liable to the dangers of decomposition taking place in these particles or masses of dead tissue.

In nearly all acute abscesses we know from experience that an incision, with poultices or other dressing, and the ordinary appropriate general treatment, is all that is necessary for a cure; but even in these cases experience would seem to indicate that the recovery is more prompt where the curette has been judiciously used. The method employed is simple enough. Usually an anæsthetic is necessary, but not always; then a very free incision; if it corresponds in length with the diameter of the abscess, so much the better, always, of course, having regard to anatomical requirements in making the cut. Let all the fluid escape that will do so; gently squeeze out as much more as possible; then with an ordinary uterine curette scrape the entire lining surface of the cavity thoroughly but gently until all shreds of broken-down tissue are removed. Stuff the cavity with absorbent cotton or other material to soak up the blood that always escapes from the capillaries during the curetting, and after this cleanse the cavity completely with dry absorbent cotton, or by irrigation, and treat the part as a con-

tused wound, stitching the flaps, introducing a drainage tube, and applying the ordinary external dressings.

Such a procedure as this seems unnecessarily troublesome when we have been in the habit of introducing a scalpel, and in a second or two completing the operation, and that without anæsthesia. But the wisdom of the operation would seem to be demonstrated to one who lays open freely a subacute or a chronic abscess, and sees how much material remains after all the fluid has been evacuated; material that must come away before the healing can be completed. So the treatment of an abscess resolves itself into the complete evacuation of the cavity, of pus and of dead areolar tissue just as much as the bullet or splinter of wood or other foreign body that may have caused it. And this end must be kept in view whether we leave the opening to nature, or use Callender's method, or Lister's, or irrigation or caustics, or even fill the cavity with paraffine, and dissect the whole mass out after it solidifies.

Does it not seem reasonable that the presence in varying quantities of this sloughy areolar tissue should explain our varying success in aspiration of abscesses, and even in the emptying of them with a valvular incision? In a few cases we succeed, in the majority we fail, with Callender's method, because we do not and can not thoroughly evacuate the abscess in that way. Would it not be more in accord with our experience in the treatment of chronic abscess were we to carry out strictly the method suggested in this paper? For it should be a matter of no surprise that a patient with cold abscess should suffer from hectic fever if a single incision be made, or an aspirator used, and the abscess only partially emptied.

The chief apparent objections to the use of the curette in the treatment of abscess would seem to be that it is not necessary, that it is likely to aggravate the inflammation already present, that there may be an undesirable loss of blood, and that an ugly scar may be left. These objections, however, are not valid ones; for if the cure be more rapid by this method, so that a laboring man may be sent back into the producing class of society some days sooner than by other methods of treat-

ment, it becomes an economic necessity, if not a surgical one. In regard to the second objection, that the inflammation is likely to be increased, this result has not been found to follow the use of the curette. That there may be an undesirable loss of blood from the primary incision we admit may be true in some cases. By limiting the length of the incision, however, in cases where, from anatomical relations, free hæmorrhage would be likely to follow the incision, and making the cut only long enough to allow of the satisfactory use of the curette, the amount of blood lost will hardly exceed that from an ordinary free incision. The oozing from the capillaries in the wall of the abscess has not been found in any case troublesome. With reference to the scar deformity, in parts of the body covered by the clothing it makes little difference whether the cicatrix be an inch or two longer or shorter; in the exposed parts of the body, for cosmetic purposes it may be made as short as is consistent with the free use of the curette, and shows little if any more than the scar after an ordinary incision.

There are some cases where the curette should be used with much caution, if not entirely avoided; such as perityphlitic abscess, deep-seated abscess of the abdominal wall or of the neck, or periarticular abscess especially, when these are acute. In such cases there might be danger of making an opening into important cavities, and giving rise to dangerous and fatal results, where otherwise a cure would have taken place.

The following cases will serve as illustrations of the preceding remarks:

A male, thirty years of age, with a chronic abscess on left side of neck for three months, presented himself to me. I opened and treated as above described. It healed in five days. I also saw two cases of acute glandular abscess on neck in children. Same treatment as above. They were cured in four days.

There came under my care a female with large subacute abscess of two months duration on outer aspect of left thigh, occurring after childbirth. Patient very anæmic, weak. Aspiration had already been practiced, but the cavity refilled. I opened it and curetted it. She was completely cured at the end of a week.

Still another, a case of child with morbus coxarius and cold abscess over inner aspect of right femur. After incision, bone was found bare over a spot as large as a five-cent piece, but not rough or softened. No hectic symptoms followed the operation. Indeed, the irritative symptoms of pain, sleeplessness, and fever were relieved by the procedure. A sinus was left after the immediate healing, and continued to discharge for about four weeks. It is possible in this case that if the parts had been kept more perfectly at rest a more prompt recovery might have taken place; but in other respects it could not have been more satisfactory.

I likewise saw a female with acute periosteal abscess of traumatic origin over the inner aspect of right tibia. I treated her as above. Two dressings; cured at end of fourth day.

A child with a "cold" abscess in Scarpa's space, right side, confining patient to house, causing much pain and general irritability. I opened as above, with no unpleasant symptoms following. The patient was soon able to be out of doors, with a decided improvement in general condition. A sinus was left, which discharged for several weeks.

Finally, I recall the case of a female with large acute traumatic abscess of anterior abdominal wall. The symptoms were acute, but pus formed very slowly. I opened and curetted cautiously, and, as the event proved, insufficiently; there were discharged small masses of sloughy tissue for a week with each irrigation of the cavity; but finally, after about four weeks, it healed perfectly. It is possible, and even probable, that the curette might have been safely used more freely here with benefit to the patient.

These cases, so very briefly reported, may suffice to emphasize the points suggested in the foregoing remarks, and may encourage the employment of more radical measures than we are accustomed to use in the treatment of abscess in suitable cases.

A NEW DRAINAGE DEVICE.

In several of the cases treated by the method suggested in this paper, a drainage tube, or, more properly speaking, a drain-

age groove was used, and seemed to answer its purpose in some respects better than the usual tube. It consists of an ordinary Jacques's catheter without any side openings, the central canal open at both ends, and the wall of the catheter so compressed as to give three moderately deep longitudinal grooves extending from what may be called the free end to within a line or two of the point of the instrument; of course, the lumen of the tube is encroached upon by the grooves, but sufficient space is left to allow of the use of the central canal for injection or irrigation. The drainage takes place almost altogether through the external grooves, and to a very slight extent by the central canal. It has acted well in the cases in which it was used, presenting three continuous grooves for drainage, which would be equivalent to three fenestræ for every few lines of the tube, thus securing a more constant and complete evacuation of the fluid contained in the abscess cavity. The grooves have not, as was feared at first, been occluded by granulations pressing into them. If irrigation be employed, the grooves allow of the ready escape of fluids injected through the central canal, without distending the walls of the abscess, and so interfering with the healing process. These drainage grooves were made by Tiemann & Co., of New York.

A word with reference to the use of these grooves in emptying the bladder, especially in the male, may not be out of place. They have been found of use in two or three cases where there was much muco-pus, or blood, that sometimes blocks up the eye of the ordinary catheter, and necessitates its removal and re-introduction. The patients have complained of no pain on the introduction of the instrument, and there can not be any occlusion of the grooves. If the urine does not flow freely, by pushing the instrument a little further into the bladder, practically three unobstructed fenestræ are presented for the purpose intended. The instrument is also equivalent to a double catheter, but, with the female, the instrument is manifestly not so satisfactory as the ordinary catheter, where, the drainage being central, allows the urine to be conducted into a vessel at some distance from the meatus.

CHRONIC CATARRHAL GASTRITIS: FATAL FROM COMPLICATION OF SUDDEN ENLARGEMENT OF THYROID BODY.

By WM. HENRY THAYER, M. D., of Kings County.

Read by title, November 19, 1885.

June, 1883.—E. R., aged sixty-one, a native of Massachusetts, resident forty years in Brooklyn, married. A man of active habits, and engaged in an engrossing business, which takes him to New York daily at five o'clock in the morning. In good health till 1876, when he began to show symptoms of gastric disturbance, and had a succession of boils, with considerable prostration and emaciation, from the latter of which he never recovered. He became very sallow, and subject to neuralgic pains in his stomach and various parts of the body.

He first consulted me in August, 1878. He was thin, sallow, and feeble, suffering every night with neuralgia in both arms, preventing sleep; had a slightly tender node over the lower part of left tibia, which had existed for three months. Appetite good; bowels regular; pulse feeble, but regular; heart's action normal. Under tonic treatment, with a hypodermic injection of morphia and atropia at night, he gradually recovered. There have been occasional recurrences of the neuralgia, more or less severe in character; in fact, he has never been wholly free from pain. He has had a somewhat imperfect digestion.

In February, 1883, he had, with oppression at stomach after supper, much abdominal pain, which returned every night and prevented sleep. This condition of affairs was prominent for two weeks before he consulted me. His bowels were regular, but the evacuations were small; appetite good; urine normal. I directed that his supper should consist of bread and milk only, and that he should take pepsin with every meal; these to be followed by:

R Bismuthi subcarb., ℥ss.; cerii oxalatis, gr. j. M.; also, a wine-glass of Hunyadi János water every morning on rising, and cherry rum when in pain; and especially, that he should do less work. His pain lessened, and soon almost disappeared. In place of the bismuth and oxalate of cerium, he was given the following pill:

R Ferri sulphatis,
 Extracti conii.....āā gr. j.
 Extracti nucis vomicæ..... gr. $\frac{1}{8}$.
 Quiniæ sulphatis gr. j. M. Ft. pil.

On the 28th of February, he was sent to Atlantic City, New Jersey, where he stayed a month, lost his pain, and gained three pounds in weight. He returned too soon to business, and, about May 1st, finding himself running behindhand, went again to Atlantic City for a few days, and in the latter part of May felt quite free from pain or any gastric trouble, and soon began to work too hard, and to be careless about his diet.

June 12.—I was called and found that he had much distress at epigastrium and under sternum, and had been vomiting—this since the evening of the 10th, when he had indulged in salmon at supper. He was given laxatives, pepsin and nitro-hydrochloric acid with each meal, sulphate of quinia three times a day, and, when in pain, whisky.

The pain, however, continued in paroxysms, sometimes severe, in the lower half of chest. There was no tenderness at the epigastrium; no tumor found anywhere; the abdomen was retracted; no fever; pulse normal. He can not retain food, and constantly raises a tough, tenacious mucus, partly after vomiting.

June 15, evening.—No change. He vomits everything taken, although food has been limited to milk, lime-water, and brandy, by the spoonful, at regular intervals. His medicines have been suspended, and carbolic acid administered, but without effect. An emetic of ipecac was followed by free vomiting of mucus. Then a hypodermic injection of solution of sulphate of morphia and sulphate of atropia.

June 16.—Every swallow of milk and lime-water still produces pain. From this date, all food by the mouth was discontinued, and he was sustained by enemata of strong beef-tea, yolk of egg, brandy and laudanum—of which he took three a day. Pain

was controlled by the hypodermic injections, but he continued to raise considerable stringy mucus.

June 19.—At 7.30 P. M., I was summoned in haste; he had suddenly raised a large quantity of tenacious mucus, with painful sensation of choking, had severe pain in his stomach, and great prostration. I found him sitting up in bed, wet with perspiration, with slow and feeble pulse, and in acute pain, the sensation of strangling having passed away. A considerable swelling in the situation of the thyroid body had suddenly appeared during the choking. I gave one drachm of brandy subcutaneously. In an hour, his pulse being firmer, gave him Majendie's solution, ℥ viij, by the same method.

June 20.—He had his morphine morning and evening as before; passed a quiet day and night, till, at 4 A. M., June 21st, there was a sudden eructation of a quantity of mucus, with similar choking to that of the 19th; great distress, and death in a few minutes. When I reached his bedside—within twenty minutes from his beginning to choke—he was dead. The thyroid body, which had nearly returned to its natural size during the 20th, was as large as before. The rectal alimentation had been continued five days, in the course of which time he had one laxative enema.

An autopsy was made the same day by Dr. A. H. P. Leuf, in the presence of Dr. B. F. Westbrook and myself. The stomach contained a large amount of viscid mucus. The mucous membrane was mammillated, opaque, thickened, softened, and grayish, with spots of excessive vascularity. There was no ulceration, nor any malignant disease or other lesion. The other viscera of the chest and abdomen were all examined and found normal.

We have here a case of chronic gastric catarrh, with the emaciation that attends it, upon which supervened an attack of acute catarrhal inflammation of great severity. Dr. Armor, who saw the patient in consultation two days before death, considered it to be a case of carcinoma of the stomach; but the absence of a tumor, and the history of complete removal of gastric symptoms by rest with change of climate and appropriate medication, threw great doubt on the correctness of his diagnosis.

But, severe as was the attack, recovery was possible, and the cause of death was an accidental condition. It was strangulation, produced partly by the blocking of the throat by a mass of viscid mucus, raised in large quantities from the stomach, aided by the pressure on the larynx of a suddenly enlarged thyroid.

Cases are on record of bronchocele interfering so much with respiration as to render tracheotomy necessary to save life; but I have seen no report of sudden fatal enlargement of the thyroid body, as in this case. The thyroid body consists mainly of blood-vessels. It is permanently enlarged in certain irritable conditions of the heart, followed, after a time, by protrusion of the eyes, constituting the disease best known as exophthalmic goitre. And, as to its temporary enlargement under some circumstances, Mr. Holmes Coote says, "Cases occur in which young girls, from seventeen to twenty-four years of age, are subject to considerable enlargement of the thyroid body at each menstrual period; the swelling subsiding as that function subsides."¹ Its anatomical structure is very much like that of the several erectile tissues of the body; and it might, as in this case, be subject to sudden hyperæmia under excitement through its nerve connections.

I have seen a similar case of sudden thyroid enlargement, but without serious results; it occurred in a married woman, thirty-five years of age, who for some years had had moderate enlargement of the thyroid body, and an abnormally rapid pulse, without organic disease of the heart. But, some time about 1881, her circulation had become quite normal, and the thyroid enlargement had disappeared. In September, 1883, she gave birth to her fourth child. The labor was normal, and her condition continued good; when, in the second week after delivery, the thyroid body suddenly enlarged, and within an hour attained as great a size as it had ever had in former years. Her general condition was unchanged, and the swelling gradually disappeared, and after a few days was forgotten. Whether or not it was accompanied with unusual activity of the heart, I am unable to say.

¹ Holmes's "System of Surgery."

ERGOT: ITS USES AND MISUSES.

By J. K. LEANING, M. D., of Otsego County.

Read by title, November 19, 1885.

ERGOT has had a reputation as a parturifacient much longer than is generally conceded. The first mention of its use in obstetrics was made by Camerarius in 1668, then there came other eulogists of its virtues, at longer or shorter intervals, until Dr. John Stearns, of New York, in 1807, succeeded in capturing the attention of the profession to some purpose.¹ America has therefore ever since claimed the credit of its enrollment among officinal drugs. Burns, of Scotland, in a work published in 1820, does not even allude to it, but this fact does not argue that it may not have been more or less used, even perhaps under protest.

It is not necessary for me at present to do more than rehearse results and broach opinions based upon a "country" experience, which, for aught I know, may be in its way unique. Still I do not lay claim to originality.

I have given ergot in those urinary troubles depending upon a crippled action of the bladder, especially in paralysis senilis. In male subjects, I carefully examine for any prostatic enlargement. If there be none, and there is no other mechanical obstruction, I usually give at first half a drachm of the fluid extract, three times a day for the first two or three days, then the same dose night and morning for a week, and after that I give it only at night. Of course, in these cases the catheter is to be used when necessary, but in a large majority of these cases, and especially in aged patients, I usually get the bladder to con-

¹ "New York Med. Repository," vol. xi, p. 308, and vol. xii, p. 344.

tract sufficiently to expel its contents, unaided by the catheter, in from ten to thirty days. In younger subjects, less time is generally required. In giving ergot as above mentioned, I have never seen any bad results, and except in the very sensitive, any nausea. I have known it misused in cases resulting from obstruction at the neck of the bladder, or in the urethra, with very much distress to the patient. In inability to retain the urine, I have given the drug in some cases of aged females, with very good effect. Sometimes I have found it necessary to combine with it the tinct. nux vomic., and again, with the phosphoric acid dil.

In leucorrhœa, in which the discharge was wholly or in part from the uterus, I have exhibited ergot with decided advantage. In such cases, if recent, I give it alone in doses of ten to fifteen minims, three or four times a day. In protracted cases, and in much impaired systems, I advise it in connection with tonics and a generous diet.

In amenorrhœa, I have used it, but never with any perceptible advantage. In cases that have improved, probably the aloes and iron with which it was combined deserved the credit. In dysmenorrhœa, however, my results have been negative; not so, however, in menorrhagia, where retained coagula constitute the chief disturbing cause. In this latter condition, if besides the great pain much nervous irritation be present, I give the ergot along with the fluid extract black cohosh (*cimicifuga racemosa*), and am rarely disappointed.

In hæmoptysis, half drachm doses of the medicament, along with the chlorid. sodii, repeated hourly while the bleeding lasts, have proved efficacious in my hands. Of course, I do not claim originality in its use for this purpose, but merely state the fact in corroboration of the well-settled views of the profession. It is my custom to continue the use of the remedy even after the cessation of the hæmorrhage, but in gradually diminished doses at longer and longer intervals. Ergotine, with or without morphia, I have tried hypodermatically—at least with satisfaction to myself—when the stomach rebelled against the usual methods of exhibition. Encouraged by my success in this direction, and by

its ascribed virtue as an arterial sedative, I have prescribed it for the mitigation of the profuse expectoration occasionally encountered in pneumonia. As its employment, however, has not been uniformly by itself, perhaps there may be some gain-saying of my partiality.

At this late day there are but few who controvert the decided action of ergot upon the impregnated uterus, especially after the establishment of the parturient process; but I am one of many who do not believe that it can bring on labor-pains *ab initio*. This remark especially applies to the early months of gestation. If, indeed, it were strictly an ecboic drug, what an agent for evil would it not be in the hands of the unprincipled! I have known many instances of its having been taken on account of its reputed abortifacient properties, but I have yet to know of its success as such when taken alone. If the medico-legal reports be critically examined, with the object of crucially testing the matter, it will be found that manipulations or violence of some kind had been also used. I have received the admissions of many females who have relied upon ergot, that they have utterly failed—the only result being more or less nausea, with some pain in the back, the latter symptom perhaps only fancied. Besides having failed in attempts at the induction of premature labor, I have known its use to bring on the directly contrary effect—that of prevention.

I shall mention two or three cases in illustration:

I was called in the night to see Mrs. P——. She was thirty-eight years of age, the mother of several children, and about five months advanced in pregnancy. She was “flowing” considerably, and had quite hard pains. The os uteri was dilated enough to admit the finger; there was no rigidity; the vagina was quite filled with coagula. Despairing in my own mind of saving the fœtus under these circumstances, I gave in decoction about fifteen grains of fresh ergot, with an eighth of a grain of morphia—the latter as an anodyne for the marked excitement—and awaited results. I was happily disappointed, for, at the end of an hour, there was a diminution of both the pain and the bleeding. At the end of the second hour I repeated the dose with a like result,

and in two hours thereafter the patient was very comfortable. An examination *per vaginam* showed less dilatation, and a firmer condition of the os uteri. There was no further trouble, for she was finally delivered of a large, healthy male child at term.

My second case occurred in 1865. Mrs. —, aged twenty-five, was about four months advanced in her second conception. After a hard day's work, she was taken in the evening with a slight discharge of blood and some pain. The pain and hæmorrhage having much increased, I was sent for. I found her much frightened, and losing considerable blood. I pursued the same treatment (ergot and morphine) as with the first case. In about four hours she was so comfortable that I left her—as the sequel proved, for good. There was no return of the pain or hæmorrhage, but much soreness on the left side near the uterus, and this lasted some time. She “went her full period,” and, when called to attend her, I found her in severe labor. I had been in the room only half an hour when the attendants said something had come from her while on the stool. On examination it proved to be a fœtus of about three and a half or four months, much pressed out of shape, and into the adhering placenta, making a flattened mass of some size. I at once made a vaginal examination, and found the os uteri dilated, and the vertex of a child presenting. Under the excitement, the pains had considerably subsided, and I gave her a full dose of ergot, and in a short time she was delivered of a lively female child.

The query is, was there a twin conception? and did one of the foeti die from the detachment of its placenta at the time the mother was taken with the hæmorrhage five months previous? and did it remain in the uterus that length of time? I can explain it no other way. There was no decomposition, and the mass had a leathery look and color. I could give other cases of similar attacks of flowing about the middle of pregnancy, arrested by the use of ergot, but space will not allow. Only this I say, that the ergot was of good quality in each case, so that it can not be averred that the drug was inert, and that my good fortune was due only to the quieting effect of the morphia.

It is in cases of protracted and lingering labor, depending

on a want of or sluggish action of the uterus, that this drug is of the utmost value. In such cases it can be given with the almost certain effect of increasing the power and frequency of the contractions, and with comparative safety to mother and child. It should never be given without a careful examination in every case. Then, if there be no mal-presentation, if the os uteri be dilated to the size of a half dollar, and dilatable, there need be no fear of giving it. I usually give from one half to a fluid drachm of the fluid extract, and repeat the dose in an hour, or sooner if necessary, and I am rarely disappointed in bringing the case to a speedy termination. Sometimes, of course, I am obliged to aid the efforts of the uterus by the use of instruments, and sometimes I am in doubt whether or not my manipulations may not have precipitated the issue.

Occasionally, though rarely, ergot fails, and, instead of hastening, seems to lessen the pains in duration and frequency. I have had such behavior from it, when I knew it was of good quality, from its good action in other cases. When ergot is given before there is sufficient dilatation of the os uteri, or when it and the soft parts are very rigid, it is misused, and entails useless suffering, and, if given in large doses, may be responsible for the death of the foetus.

For the parturient female subject to "flooding" ergot is certainly a remedy of value. In post-partum hæmorrhage, it should be promptly given, since puerperal fever or septicæmia often follows this great loss of blood; perhaps I might more correctly state it, that the system thus debilitated becomes an easy prey to sepsis. This is true at least in country practice. The absorbents are certainly much more active in these cases, and if coagula are retained *in utero*, or fill the vagina, we must look out for decomposition and consequent absorption of poison.

I am in the habit of giving ergot in almost every case of labor before the birth of the child, and afterward if the uterus do not firmly contract. Our patients in the country are often miles away from office or drug store, and in cases of septic poisoning are without antiseptics, without appliances, and without nurses capable of using them, or understanding the great neces-

sity of thoroughness and promptness. Hence the urgency and need of the use of preventives, and of these the chief one is ergot.

A few remarks on the bad effects of ergot on the foetus and I close. It is claimed by many that there is great danger to the foetus by the use of this drug, from the great pressure of the uterus on the brain of the child, from pressure upon the umbilical cord, and from ante-natal detachment of the placenta.

In answer to these opinions and objections, we know that the head of a child may be pressed upon severely for a long time, and yet the child will be born alive, unless there be an uninterrupted action of the uterus; and this we never have without interference with its natural action. Often we have the impacted head due to the severe and continuous contractions of the uterus, and yet, if the pains abate even for a very short time, the child may be, and usually is, born alive. Can we be warranted, then, in saying that any pressure the uterus can exert upon the brain of the child is the cause of its death? Neither do I believe that a premature detachment of the placenta very often takes place while the child is *in utero*. In such an event we should have a copious hæmorrhage either before or after the birth of the child. Yet we know the child is sometimes still-born after ergot is given without any flooding whatever. In my judgment, and I am not alone in that opinion, when ergot is given in such large and frequent doses as to produce continuous contraction it acts perniciously upon the foetus. When given with dosage so moderate that the usual rest between the pains is maintained, though of less duration, we need never expect any bad effect on the child. During the contraction of the uterus the placental and uterine circulation of the blood is interfered with or arrested. Now, the danger to the child is not owing to the pressure of the uterus upon the child's brain, nor upon the cord, but to this stoppage of the circulation through the uterine blood-vessels, and, as a consequence, the proper change does not take place in the foetal blood, and the child dies, the same as an adult dies when deprived of air.

If the action of the uterus, though ever so severe, be inter-

rupted, so that the vessels of the uterus receive a fresh supply of blood from the mother, the child will survive. If the uterus were to act continuously in any case of labor, whether ergot was or was not given, the effect on the child would be equally dangerous. Here we see the wise provision of nature, of alternate contraction and relaxation of the womb. And, therefore, so long as we do not give ergot in such doses as to interfere with this wise provision, we can give it without fear of bad results to mother or offspring.

NUTRITION IN LITHÆMIA.

By CHARLES G. STOCKTON, M. D., of Erie County.

Read November 19, 1885.

LITHÆMIA is called the gouty dyscrasia, but it is so unlike gout that I think it might as well stand as simply a dyscrasia. Gout is rare; lithæmia is common. Gout comes unexpectedly, like a robber at night, and after a while leaves you feeling better than before, thankful that life was spared, and with faculties awake to regain what has been stolen. Lithæmia, like a mendicant, is always at your door; one of the well-dressed kind that follows you to your table, to your chamber, to your study. The only relief is to give and keep giving; and, truly, "'tis more blessed to give than to receive." Gout may be driven off with drugs, but lithæmia flourishes thereon. Rheumatism is as near to gout as is lithæmia. They are related to each other, but are not joined in holy wedlock.

I appreciate the difficulty of defining such disorders and confining them to their definitions, but I wish that writers would separate them a little more. Lithæmia implies the presence of a certain irritant, lithic acid, within the blood; and for the nonce, granting this, the question is, first, How did it get there? Second, How shall we get it away? Is it from fault in the *prima via*? or from an overworked liver? or too little oxygen? or from disturbed innervation? or—what?

That there is a condition called "biliousness" by some, frequently met with by all, and having a train of manifestations that are greatly modified by the character of the food taken, there can be no doubt. The disease—if disease it may be called—is generally attributed to faulty work by weakened, dilapidated digestive organs—the stomach, intestines, liver, and pancreas.

Nevertheless, we are continually finding people who seem to have sound organs and no dyspepsia, and yet are "bilious." I venture the prediction that if the digestive organs of these people could be subjected to scrutiny they would be found without fault. The aliment is wholesome; the primary digestion is complete; and into the fluids of the body are poured the chyme and the chyle properly prepared.

The sanguineous system is freighted with nutrition for distant provinces, and its transportation is hastened in direct ratio with the heart's action, and the heart's action is effectual, or ineffectual, in proportion as this burden of nutrition is promptly received and disposed of at its myriad points of destination, the cells, the protoplasm of all the body. The actual nutrition is cellular. The question is not how much the blood will receive, but how much the cells will assimilate. Hence we talk of tissue metamorphosis, and of the proper oxygenation of the blood; well knowing that in the healthy body the matter of waste depends upon oxidation, and that the matter of repair depends upon the appropriation—adaptation of nutriment from the fluids of the body by the cells of the organs.

The blood has two hands. In one, the plasma, it conveys nutriment to the cells; in the other, the hæmaglobin, it carries oxygen to them, energizing, and through activity depleting them, rendering nutrition possible.

We have reached a cardinal point.

Tell me why some healthy animals are "easy keepers" and others "hard"? Tell me why often small eaters grow fat and great eaters remain lean? And tell me why, when age creeps on apace, some grow puffy and others shrivel up?¹ Such examples of development and decay are common and are hereditary. "Like father, like son." And, when we say this tendency is hereditary, we admit that it is vital. In the scheme, in the architectural design of the being, are to be found the answers to these questions. Now, who will explain why the tissues of some are prone to nourish and go to waste properly and in order, while others act out of time and out of tune?

¹ "Surgical Pathology." Paget, pp. 82, 83.

While the secrets of vital phenomena are unfathomable, some of their manifestations are capable of being sounded.

The nervous system is intimately connected with the whole process of nutrition. Tickle one and the other always laughs. A nervous system distraught by venery or the loss of sleep, by malaria or the taking of drugs, is attended by waste. This is partly through the vaso-motor system and arterial tension being so prolonged that there results a partial venous stasis—cyanosis—and the tissues are poorly fed. The effete material is not carried out of the body so rapidly as it should be, and besides that—what I think of very great importance—the lymphatic circulation is hindered. Let us remember that the lymph spaces and the terminal blood-vessels cohabit; that there is a constant interchange of substance between them; that blood supply and blood pressure have a great deal to do with the motion of the lymph current, just as the quality of the blood has to do with the quality of the lymph. Let us also remember that the blood is dependent upon the lymphatic system for its corpuscles, so that oxygenation, to be perfect, must have an active lacteal tract; that the real nutrition of tissue-cells is from the lymph in which they bathe; that the rapid abstraction of lymph from animals proves more speedily fatal than hæmorrhage; and we must realize how important in this question are the lymphatics.

With the nervous, the sanguineous, the lymphatic systems in united, harmonious activity, the tissues would be properly fed and “biliousness” probably forgotten. But, with these perturbed, there is imperfect metabolism, suboxidation, and lithæmia.

The tissues take up less nutrient material from the blood, and that fluid soon becomes overcharged both with that which is effete and that which is not. The nerve-centers are further distracted, among others, those which preside over the circulation, resulting, in numerous instances, in still higher arterial tension, associated with a slow pulse, greater venous and lymphatic engorgement, oxaluria, and a multitude of symptoms that linger as hangers on.

This state of affairs must affect the liver unfavorably, re-

tard the portal circulation, and offend the primary digestion. When there is a solidified lung, there is a backing up of venous blood; and this illustrates the somewhat similar fact that when the cells are indolent, and the tissue changes slow, there is also a backing up of nutrition.

The liver now a sluggard, and, occupying an intermediate position between the primary digestion and the ultimate nutrition, is capable of deranging both. Not to be too elementary, it is enough to say, experience teaches that when the liver is thus disordered, improvement follows by lessening its work. This may be done, first, by limiting the amount of food; second, by permitting only such articles of diet as the liver receives kindly; third, by making the primary digestion as complete as possible. The first is easily accomplished, where one can overcome that pernicious habit of stuffing patients, and for which the profession is to blame. Study of the second point has led some to advise a dietary which admits of proteids but excludes starches, sugar, and alcohol. Others, however, allow farinaceous food, but limit the eating of azotized substances. It seems to me that these contradictory views may be satisfied by studying the third point, the perfection of primary digestion.

The proteids which leave the duodenum as peptones, in some manner changed by absorption, enter the portal circulation as a form of albumen. This, in the liver, meets with unknown changes. Some is transformed into glycogen, a carbohydrate. Much albumen, in some way modified by its liver experience, passes on into the circulation to be consumed by the cells, and it would be expected that the resulting urea and uric acid would prove most pernicious to those suffering from acute gout. So far as I know, the experience of all the world confirms these expectations, except that of Dr. Draper and his adherents. But we are indebted to Dr. Draper for pointing out that a nitrogenous diet is, of all, most agreeable to some lithæmics, so-called. That it is the best diet for all lithæmics, I do not believe, and for the reasons that follow.

Some "bilious" individuals have good stomachs, but have weakened intestinal digestion. They digest starch with diffi-

culty, but meat with comfort; and in such cases meat will be found to agree with the liver. Other "bilious" individuals, with gastric catarrh, abhor albuminoids; and, when such substances are eaten, they are poorly peptonized and, I suggest, are absorbed into the portal vein improperly prepared for their liver tenement, and reach that organ as disturbers of the peace. At such a time a man may have auto-inoculation, from either ptomaines or other poisons even less known. Does any one say that this is impossible? Then upon him rests the burden of telling *why* it is so. Of one thing I am sure, that it is, in a proportion of cases, impracticable to continue the azotized dietary, for the reason that your patient will grow worse upon it; but when you put him upon a diet of starches and fats, properly re-enforced with diastase and pancreatin, there will ensue a great betterment.

Do not let me overstate myself, The starchy diet is often the very worst and the albuminoid the best. This is so for the reason that the primary digestion does not change the starch into a suitable glucose. Nevertheless it is absorbed by the *vena porta*, together with irritating acids, and instead of a transformation into glycogen, and from glycogen back again into a purified, chastened glucose, adapted to its new life in the better world of the general circulation, where it and its companion, oxygen, shall serve the vital cell, it proves a defiler in the house of its father, it deranges the liver's glycogenic function, and part of it slops over, so to speak, and enters the blood as a doer of evil.

If asked how I would manage lithæmia, I would answer: avoid quinine; look carefully after gastro-intestinal catarrh; keep open all the sewers of the body, including the liver; be most mindful of the primary digestion and suit the diet to the case, using, if needed, pepsin and hydrochloric acid with albuminoids, vegetable diastase with starches, and extract of pancreas with milk and the fats, after the admirable plan of Roberts, of Manchester. And finally, the most important and most neglected agent of all, oxygen, should be got into the body. Do this by massage, which will improve the capillary circulation

and hasten the lymph stream ; by inhalation of oxygen, which promises much in this direction ; by change of climate, or, if the case be not urgent, enjoin, as far as practicable, an active out-of-doors life, with horseback riding. For if there be anything that is truly anti-lithæmic, exercising, exhilarating, tingling a man into the belief that he is related to the gods, that thing is equitation.

THE ACTION OF MICRO-ORGANISMS UPON SURGICAL WOUNDS, WITH DEMONSTRATIONS.

By FREDERIC S. DENNIS, M. D., of New York County.

Read November 19, 1885.

TEN years ago this winter I published an article on the treatment of wounds, in which was mentioned the important fact that putrefactive suppuration was a species of fermentation produced by microscopic organisms. In my present paper I shall endeavor to show practically what was then advanced theoretically. Much of my attention has been directed to the ætiology of putrefaction in wounds, and my present contribution will exhibit the results of some practical work performed in the Carnegie Laboratory.

I shall show the cultures of these different varieties of micro-organisms which affect surgical wounds, using as culture-media Koch's sterilized jelly, blood serum, infusions of beef and turnip, bread-paste, and potatoes. Following the demonstrations of the micro-organisms which are found in pus, water, earth and air, I shall next exhibit the specific micro-organisms which infect special surgical wounds, and close by offering some practical observations in regard to wound treatment based on the conclusions which have been derived from a study of the life-history of these various cultures. Three large metropolitan hospitals have furnished the opportunities for my work, and I trust to have used them aright.

During the past few years there has been a great controversy among surgeons in reference to the cause of septic infection in surgical wounds. Some claim that the micro-organisms are present in the air, and that if these can be prevented from com-

ing in contact with a wound no decomposition or infection can occur. Others, again, claim that the sepsis is not caused by micro-organisms in the air, and that air itself in contact with a wound will not produce decomposition. Both of these schools of surgeons have been in open conflict for years, and both teach in accordance with their own views. So distinct is the line of demarcation between them that the one teaches nothing but antiseptics, the other everything else but antiseptics. The time is now ripe for a third class, who, while representing advanced views in surgical pathology, are still loath to ignore all the traditions of the learned masters of our art. This last school will accept the theory of septic infection as the result of putrefaction, and will direct their treatment to the prevention of supuration. They will not believe, indeed, that all the success of surgery is to be based entirely upon the acceptance and practice of this one great principle of antiseptics. They will not eliminate such great principles as physiological rest, position of wounded part, bodily comfort, immunity from pain, special therapeutical treatment, attention to the hygienic surroundings of the patient, regulation of the diet, the application of suitable constitutional remedies, and other essentials which readily suggest themselves without the naming. These and like details, trivial though they may seem, contribute to success, and indicate the necessity of an unbiased judgment. Our forefathers and our contemporaries must join hands.

For the sake of convenience, I shall divide my subject as follows:

- I. The existence of micro-organisms.
- II. The action of these micro-organisms upon fluids, solids, inorganic matter and living tissues.
- III. The specific action of certain micro-organisms as the cause of certain surgical diseases.
- IV. The methods adopted by the surgeon for the destruction of the micro-organisms in wounds.

In discussing the relations which micro-organisms bear to surgical diseases, the fact must never be lost sight of that micro-organisms may exist in the body independently of any morbid

action. The entire cutaneous surface, the mucous surfaces, the respiratory organs, the alimentary canal, are covered and filled with millions of micro-organisms; but the deeper tissues escape until some exciting cause develops them. The normal tissues are impregnable, as a rule, against these "unseen enemies"; but let the standard vitality of the deeper tissues become impaired, or a secretion altered, and you then have prepared at once a suitable hot-bed for the lodgment and multiplication of these dreaded agents of destruction.

In demonstrating the existence of micro-organisms, I do not propose now to discuss the effects of their presence upon any inorganic substance, or upon any living tissue. The proof of their existence, however, is necessary before a reference to their action upon tissues. I have, therefore, thought best to make such a separation of the subject, for the purpose of making the great principles which underlie the existence of micro-organisms more evident. I fully appreciate the difficulty of my task.

I shall now place a drop of pus upon this cover-glass, and then rub it against another clean cover-glass, and the drop of pus becomes spread out in the form of a thin, dry film. I now submerge the cover-glass under a solution of gentian violet for two minutes; this stains the film purple; next, I submerge the same cover-glass under a solution of iodine dissolved in iodide of potash, which precipitates the stain in the micro-organisms, but not in the pus; next, I wash the cover-glass in a little absolute alcohol for two or three minutes, and this washes the stain out of everything but the micro-organisms; next, I dip the cover-glass in eosin which stains pus red, but does not affect the micro-organisms, and thus I get a contrast color. This method is known as Gram's, and is a most useful and simple one to be employed. The pus corpuscles are stained red, while the micrococci, or the micro-organisms in the specimen, are stained a violet color. I know that these micro-organisms were once living, because they have been cultivated in a suitable soil, and are growing here in this jelly.

Let me now in another way show the existence of micro-organisms; instead of taking pus, let me take ordinary drinking

water. Let this water stand for a few days in this test-tube, and you will have a sediment at the bottom, which, if put under the microscope, will be found to be swarming with millions of micro-organisms. This is, however, an unsatisfactory proof, for, except to adepts, it is difficult to distinguish living organisms from *débris*, foreign bodies, vegetable matter, and the like, found in drinking water in such abundance.

The most accurate, and at the same time the most scientific, test is by means of Koch's sterilized jelly spread out upon a thin plate of glass. I have here a small tripod which is so constructed as to be capable of being

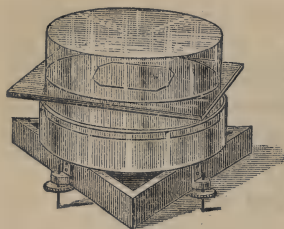


FIG. 1.

made perfectly level, and to indicate any deviation toward the slightest angle. This desideratum is secured by the carpenter's level, which is attached to the frame. This trouble is taken in order to have a film of jelly uniformly spread out over the surface of the glass plate. Having carefully disinfected and thoroughly

sterilized the plate, I now take this test-tube, which is about one third full of Koch's sterilized jelly, and add three drops of Croton water, which is introduced into the jelly by means of a clean pipette. This experiment should be performed in a place where there are no draughts. For the purpose of mixing the jelly and the water, I shake the tube well. I now pour over the glass plate the contents of the test-tube, and immediately place over the jelly the bell-jar. Upon these plates thus prepared can be seen a large number of colonies of micro-organisms, which have developed and multiplied from those contained in three drops of Croton water.

I am indebted to Dr. H. M. Biggs, of the Carnegie Laboratory, for an account of the analysis of water from Plymouth during the recent epidemic of typhoid fever. He visited that place to investigate the cause of the epidemic. In the report he states that the chemical examination of the different specimens of water collected at Plymouth, made by Professor A. A. Brene-

man, showed that the water from the Davis well contained evidences of most serious contamination with putrescible organic matter. This well was situated on the bank of the reservoir, near the house where the first case of typhoid fever occurred. Specimens of the water, which had been collected in sterilized bottles, with the most careful precautions, were examined for the presence of micro-organisms, with the hope that the typhoid bacillus might be found, and that thus could be shown the direct relationship supposed to exist between the micro-organisms present in the contaminated water and those found after death in the different organs in this disease. Cultures were made in the ordinary manner upon glass plates with every possible precaution. Micro-organisms of many different species were found to be present in enormous numbers. The number present was so large that it was found necessary to dilute the water with five hundred to seven hundred parts of gelatine in order to obtain plate-cultures that were at all satisfactory. Then, notwithstanding this extensive dilution, the number of colonies developing in these plates was exceedingly large. Thirteen or fourteen different varieties of micro-organisms were thus isolated from the water, comprising a number of varieties of each of the forms of micrococci, micro-bacteria, and bacilli, many of which were organisms of putrefaction. No form could be found among these which corresponded, as to its morphology and growth in different culture-media, to the cultures of the typhoid bacilli which were used for controls, and which had been obtained from Germany. More recently cultures have been received from Koch's laboratory, in Berlin, and it was then found that the original cultures were not genuine typhoid bacilli, so that the observations on this point were valueless. However, the presence of the large number of micro-organisms of different species, many of them being organisms of putrefaction, is very significant when taken in connection with the results of the chemical analysis of the water, which showed the presence of a large amount of putrescible organic matter.

The experiments to obtain micro-organisms in dirt are conducted in the following manner. I have here a sterilized glass

chamber which is lined by blotting-paper soaked in bichloride of mercury, and which chamber has been subjected to the same treatment as the glass plate in the previous experiment. This glass chamber has been allowed to stand for twelve hours, so as to permit the atmospheric organisms therein to gravitate to the bottom. The glass plate in the glass chamber is now covered with a thin film of Koch's sterilized jelly, and then the soil or earth to be examined is sprinkled in transverse rows upon the plate. Upon this plate I have sprinkled some dirt from the streets of New York, and from the few particles on the end of a knife-blade there are innumerable points of infection. I have also sprinkled upon another glass plate some dirt which was taken from the ground one hundred feet deep where an Artesian well was in the process of construction. The difference in the two plates is accounted for by the fact that one plate is sprinkled by surface soil, the other by soil obtained from a great depth. The fact that these points of infection upon the plates are due to micro-organisms can be proved by examination with the microscope, which shows the morphological appearances of living organisms, and further by cultivation of these germs upon a nutrient soil.

Next, let us study the existence of micro-organisms in the air.

This subject is one of great practical importance, not only from a sanitary, but especially from a surgical point of view. I am indebted to Professor John Chiene, of Edinburgh, and to his assistant, Mr. Hare, for valuable laboratory facilities extended to me during the past summer while in Scotland.

These glass capsules, which contain Koch's sterilized jelly, have been used for the purpose of testing the purity of the air. The idea suggested itself to me to make some observations in regard to the quality of the air at mid-ocean on the Atlantic. Pasteur made some observations in the Alps, from the Mer de Glace, near the Montanvert. He exposed twenty flasks containing organic infusions to glacier air; only one out of twenty flasks showed signs of the presence of micro-organisms, and, when he descended to the plains below, eight out of twenty flasks became turbid from the presence of micro-organisms. In accordance

with these observations I undertook the task of testing the quality of the air nearly a thousand miles from land, and of inquiring into its power to produce putrefaction. I first exposed a capsule in the state-room upon the main deck of an ocean steamer. The sterilized jelly was exposed to the air of the state-room only fifteen minutes during one afternoon. To my astonishment I found within eighteen hours that over five hundred points of infection had developed from the contaminated air in the state-room. I have here the same capsule preserved with great care, and there can be seen upon the surface of the jelly over five hundred points of infection. I then selected another capsule which was prepared weeks previous in the same way, and which was sterilized as all the others were at the time of preparation and at the time of the observation. This second capsule was subjected to the same tests in my own cabin upon the promenade deck, where the circulation of air was free and direct from the ocean with nothing intervening to destroy its quality. There were two doors, two port-holes, and a large skylight above, all of which afforded free access of air from the sea. After fifteen minutes' exposure of the jelly twenty-four hours afterward, I found no points of infection upon the surface of the capsule. Surprised at this phenomenon, I selected a third capsule which, like the second, did not show any evidences of the presence of micro-organisms at the time of the observation. These two capsules after ten days began to show slight traces of infection, to the number of five or six points; but the contrast from the one in the cabin below, where in eighteen hours five hundred points of infection developed, and those on deck, where in ten days only five or six points of infection were visible, should awaken the attention of steam-ship companies toward a more thorough method of ventilation. I then placed in the stoker's room capsules, and with a temperature of 140° Fahr. the quality of the air was found to be immeasurably purer than in the passengers' state-rooms. However, the capsules in the stoker's room, in the front of the furnaces, gave evidences of infection after a few days. Finally I tested the air from the bow of the ship at the same time as these other observations

were made. The capsule was exposed fifteen minutes, and I held it over the ship at the very bow, and with the wind blowing toward me, so that no germs from the ship nor from my person could possibly reach the jelly. The result of this observation was perfect. The jelly which was exposed to the air at that time, one thousand miles from any land, is as uncontaminated this the nineteenth day of November as when it was sterilized in Edinburgh last August. This is the first experimentation ever recorded in this line, so far as I know, in which special reference was had to the presence of micro-organisms in the air in the middle of the Atlantic. A single observation, I admit, is insufficient upon which to base conclusions regarding the purity of any air, yet is significant when taken in connection with the others which were conducted in mid-ocean. Place this one side by side with the tests made by Pasteur, of the air blowing over fields of ice for many miles, and you can not shut your eyes upon an impressive fact. In like manner, with the kind assistance of Dr. Frank Grauer, I have examined the air in the different wards of the third surgical division of Bellevue Hospital, also in the Sturgis pavilion, in the Erysipelas pavilion, in the Morgue, in the dissecting-room, in cellars, and upon the tops of private dwellings, and the results of these experiments, counting up over one hundred and fifty, as well as representing many weeks of labor, are now before this Association for adjudication.

Pasteur began a series of experiments, a passing reference to which has already been made, with bulbs which contained infusions that had been sterilized. He opened twenty-four such bulbs as I have here upon Mount Poupet, which is eight hundred and fifty metres above the sea-level. He also opened twenty upon the Montanvert, near the Mer de Glace, which was two thousand metres above the sea-level. In his report he states that out of the twenty-four opened on the Jura five only were infected, and of the twenty opened upon the Montanvert one alone became turbid. Pasteur suggests that, if the bulbs were exposed at a great height by an aeronaut, no germs would be found in the air to cause turbidity of the infusions. My exposure of the Koch's sterilized jelly nearly a thousand miles

from land accords with the view which Pasteur then held, although up to the time of my experiment no data had been furnished.

When it is considered, by an attempted mathematical calculation which I have made, that millions and millions and millions of these micro-organisms infect the air in which operations are daily performed in our hospital wards, and when, further, the other fact is demonstrated that these germs are the agents of putrefaction, or the "unseen enemies" which cross our path, is it not a subject of mighty importance for us to study how to protect our patients from the forces which can turn the battle for life or death in any operation? It is obvious, from an observation of these various capsules and flasks and glass jars and the tray of sterilized potatoes and the boxes, that the germs in the air are not evenly distributed, but that they fall upon the jelly in clouds, and that here and there the jelly is free from any infection. In this glass cylinder, which has been most elaborately and carefully prepared to insure success in the experiment, is deposited a layer of Koch's



FIG. 2.

sterilized jelly, and over the nutrient bed the air is forced slowly by a vacuum produced by syphon action, and in the horizontal column of air germs fall upon the nutrient pabulum below, and the points of infection are thus distributed unevenly over the surface. There are, therefore, aerial interspaces between bacterial clouds where the spaces are free from germs, and this phenomenon serves to explain the important clinical fact that, if a wound be exposed in a ward for a moment, it may be just as

a bacterial cloud has passed, and in the interspace the wound has no germs to fall upon it, and hence there is escape from infection. While this fact explains the absence of infection in one wound and its presence in another in the same ward, it also serves to teach us to be constantly on the alert against contamination. A further examination of these several trays shows also that the micro-organisms are not found uniformly in the air; for in some of these glass vessels there are to be seen many points of infection, while in others the points of infection are absent. These glass vessels were exposed at the same time, under the same circumstances, upon the same table, and in the same air, and yet you see some are infected and others escape.

The most common variety of living organisms found upon the beef infusion is the *penicillium glaucum*. This is also seen upon Koch's jelly, which it partially liquifies, and upon the surface the mold appears in the form of a zone, which is usually green, with wide variations in the shade. Instead of the zone, a velvety growth is sometimes observed, and the mold appears like a piece of absorbent cotton which might have fallen upon the jelly. This mold grows upon the surface of the jelly or infusion, and must not be mistaken for various organisms which may alter the consistence and color of the jelly below the surface and in the substance of the jelly. In imperfectly sterilized jelly or fluids, the presence of organisms often leads the observer into error; therefore, too great care can not be exercised in their preparation. With all my precautions, I have failed in a series of interesting experiments by reason of the jelly being impregnated with germs in the air in the laboratory while in the act of pouring the jelly from a sterilized vessel into the capsules. The jelly was exposed to the infection for only a few seconds. When the capsules are filled, as they must be, amid the greatest antiseptic safeguards, they are suitable for experimentation.

Instead of the *penicillium glaucum*, bacteria may be found in great abundance. In some cases, as is illustrated by these flasks, bacteria seem to destroy the mold, whereas, in other cases, the *penicillium glaucum* annihilates the bacteria. The presence of

the one to the exclusion of the other depends upon the reaction of the fluid, the character of the air in which it is exposed, as well as upon the variety of bacteria.¹ Mycelia may be found in the bottom of the fluid, and this mold may occupy the fluid to the exclusion of all other forms of living organisms.

Most of our antiseptic solutions, carbolic acid notably, are acids which act as better germicides than alkaline solutions, at least as regards the action of bacteria. The question as to the reaction of the antiseptic solution in its influence upon the development of micro-organisms is one which is only partially settled. Daily experiments are made, observations recorded, and results obtained. Every antiseptic solution of merit has many advantages as well as many disadvantages, and experimentation must fix the value of one over the other. I have found, for example, that certain antiseptic solutions, if employed to moisten bread-paste upon which cultures have been made, will often cause the death of a special micro-organism, but other varieties will develop and thrive in their stead. What is the best antiseptic is still an unsolved problem.

The existence of micro-organisms having been demonstrated in pus, water, earth, air, and other media, it now seems pertinent to direct attention to a consideration of some of the most important characteristics of these living micro-organisms. This is necessary in order to better understand the action of these micro-organisms upon living tissues. An anatomical description, therefore, of these germs, together with some remarks upon their characteristics, will be given before discussing their action.

A micro-organism consists essentially of three parts.

(1) Cellulose membrane. (2) Protoplasm. (3) Cilia or flagella.

(1) The cellulose membrane, which resists the action of acids and alkalies, is exceedingly delicate and thin in texture. This membrane enables the germ to resist the action of acids and alkalies.

¹ Bacteria grow best in either neutral or a slightly alkaline fluid, and penicillium glaucum thrives best in an acid infusion. Hence, if germs are sown in equal quantities into an acid or an alkaline fluid, the growth of the germ will be influenced by the fact of its adaptability to the reaction of the fluid.

(2) Protoplasm. Within the cellulose membrane is a mass of protoplasm which is generally colorless and always nitrogenous. Sometimes it is colored with some pigment, and it is often granular.

(3) Cilia or flagella are found in certain forms of bacteria and bacilli. The profession of medicine is indebted to the Rev. Mr. Dallinger, of Sheffield, for the demonstration of the cilia or flagella. One of the greatest discoveries in bacteria has thus been made by one not of our own profession.

Requirements of Micro-organisms.

Nutrition, warmth, moisture, are three essential conditions for the growth of micro-organisms.

First, moisture. Water is absolutely necessary; without it the movements of bacteria and bacilli are arrested, and the physiological functions are destroyed.

Second, nutrition. Nitrogen in some form is essential to the growth of the protoplasm of the micro-organism; the nitrogen may come from the albuminous compounds through the process of putrefaction or from nitric acid in the ammonia. Carbon is also necessary for the growth of germs.

Oxygen is an important element for the life of aerobic, but not for the life of anaerobic micro-organisms. In other words, oxygen is necessary to some and fatal to others. The vibrio of butyric acid is an example of a micro-organism which lives and multiplies with little or no oxygen; air, in fact, destroys its action and arrests the butyric acid fermentation which this vibrio produces.

The mycoderma aceti, of which I have here a beautiful example taken from a decanter upon my sideboard, is a micro-organism which requires oxygen for its growth and multiplication. This germ is the one concerned in the manufacture of vinegar. If this wine is hermetically sealed and then exposed to a heat 60° Centigrade the wine will never acetify. But if the wine is uncorked, and it is exposed to the action of ordinary air, the acetification will follow as it has in this bottle. The mycoderma aceti will thrive upon the surface of wine in the

form of a thin floating film, but it can not live below the surface owing to the absence of air. Oxygen seems necessary to spore development. The spores of anthrax bacilli will never germinate except they are freely exposed to oxygen.

Now as to warmth. A temperature of blood-heat, or 98° Fahr., is found to be the most favorable to the life of micro-organisms. Great extremes are fatal to their life. 122° Fahr. destroys bacterium termo. 176° Fahr. will not destroy the spores of bacilli; in fact, they are not prevented from germination by a temperature of even 212° Fahr. A temperature of 32° Fahr., or that of freezing-point, will check this development of the germs, although -123° Fahr. has failed to kill the spores of bacilli. Great alternations from a very high to a very low temperature are apt to be fatal.

The presentation of a suitable classification of micro-organisms is for obvious reasons very difficult. The one which seems to me the best adapted for our purpose is that of Cohn, somewhat modified, and in this classification I will take the liberty of adding some germs which, though having a special relation to surgery, are not included in Cohn's list, and which have never been heretofore described in any work. The classification, though it is numerically great, can be verified in nearly every instance by a reference to these cultures upon the table, for nearly every germ, without exception, is found in this list, in a state of cultivation upon the numerous sterilized surfaces either contained in flasks or exposed upon a surface.

I. *Sphero-bacteria*.—Bacteria in spheres.

II. *Micro-bacteria*.—Bacteria in short rods.

III. *Desmo-bacteria*.—Bacteria in straight filaments.

IV. *Spiro-bacteria*.—Bacteria in spiral filaments.

V. *Fungi*.

No. I, II, III, IV, belong to Schizomycetes.

No. V belong to Blastomycetes.

I. *Sphero-bacteria* :

A. Chromogenes	{	Micrococcus prodigiosus.
		Micrococcus luteus.
		Micrococcus aurantiacus.

- | | | |
|---------------|---|-----------------------------|
| B. Zymogenes | { | Micrococcus crepusculum. |
| | { | Micrococcus ureæ. |
| | { | Micrococcus stringy wine. |
| C. Pathogenes | { | Micrococcus erysipelatosus. |
| | { | Micrococcus gonorrhœa. |
| | { | Micrococcus septicus. |

II. *Micro-bacteria*:

- | | | |
|----------------|---|---------------------------------------|
| A. Chromogenes | { | 1. Bacterium æruginosum. |
| | { | 2. Bacterium xanthinum. |
| B. Zymogenes | { | 1. Bacterium termo. |
| | { | 2. Bacterium lactis. |
| | { | 3. Bacterium aceti. |
| C. Pathogenes | { | 1. Bacterium of septicæmia (Davaine). |
| | { | 2. Bacterium of septicæmia (Koch). |

III. *Desmo-bacteria*:

- | | | |
|----------------|---|---------------------------|
| A. Chromogenes | { | 1. Bacillus ruber. |
| | { | 2. Bacillus of blue milk. |
| | { | 3. Bacillus auranticus. |
| B. Zymogenes | { | 1. Bacillus subtilis. |
| | { | 2. Bacillus septicus. |
| | { | 3. Bacillus ulna. |
| C. Pathogenes | { | 1. Bacillus anthracis. |
| | { | 2. Bacillus tuberculosis. |
| | { | 3. Bacillus of glanders. |

- | | | |
|-----------------------------|---|-----------------|
| IV. <i>Spiro-bacteria</i> . | { | 1. Vibrio. |
| | { | 2. Spermochætæ. |
| | { | 3. Spirillum. |

- | | | | | | |
|-------------------|---|----------------------|---|-------------------------|---------|
| V. <i>Fungi</i> . | { | I. Mold fungi | { | 1. Penicillium glaucum. | |
| | | | | 2. Aspergillus | albus. |
| | | | | | niger. |
| | | | | | repens. |
| II. Yeast fungi | { | 1. Torula cerevisiæ. | | | |
| | | 2. Mycoderma aceti. | | | |

Micrococci.—Micrococci are small oval or round micro-organisms which possess no cilia. They differ from bacteria and bacilli by the absence of the cilia or flagella, which permit a certain amount of locomotion to bacteria and bacilli.

The size of micrococci varies from a half of μ to three μ . Micrococci multiply by fission, and not by spores or germination. If a single micrococcus is examined under the microscope it will be found oval or round, and its size is within the dimensions already given. This micro-organism would be termed a monococcus.

This monococcus multiplies by fission or division by a central cleavage. The monococcus becomes elongated, and then centrally constricted, and in this manner a monococcus is converted by simple division into a diplococcus.

It is to be noticed that the micrococci, while they divide into sections, are never rod-shaped, as is the case in bacilli. The two segments from the single monococcus are still invested by a cellulose membrane, which forms a narrow bridge between the two elements. This cellulose membrane is the original investing membrane of the micrococcus. The two elements, the formation of which from the monococcus has just been described, may again subdivide, but in a different plane of cleavage from the first segmentation. This result gives four elements, and the single group is termed a tetracoccus, and many such groups tetracocci.

The single diplococcus may again divide in the same plane, and this process may go on indefinitely until a chain is formed, each link of which is adherent to the other in precisely the same manner as the two links are in the original diplococcus. When the elements divide in this manner, the result is a number of elements, one adjoining the other, but each element having still the delicate bridge of cellulose membrane as was described in the formation of the single diplococcus. Instead of a straight chain, occasionally an angle may be formed, or the chain may assume a serpentine course. From its fanciful resemblance to a chain, this formation is termed streptococcus, or streptococci.

The micrococcus again, instead of dividing to form a diplococcus, a tetracoccus, or a streptococcus, may so divide as to resemble a bunch or cluster of grapes, and Ogston, of Aberdeen, has termed the micro-organisms arranged in this form staphylococcus.

The micrococci finally may divide in such a manner as to form an irregular mass. These micro-organisms within the mass are held in a gelatinous matrix. This arrangement is termed zooglœa, or colony, and this variety is seen typically illustrated in metastatic abscesses.

The elements in the zooglœa mass are the same size, but the masses of zooglœa may vary in size.

Thus it is evident that the segmentation of the micro-organisms may be such as to form from the I, monococcus; II, a diplococcus; III, a tetracoccus; IV, a streptococcus; V, a staphylococcus; VI, zooglœa; and all of these different varieties are here present, and can be demonstrated at any time.

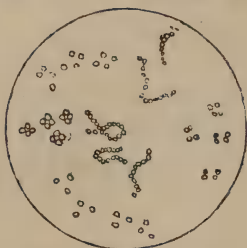


FIG. 3.

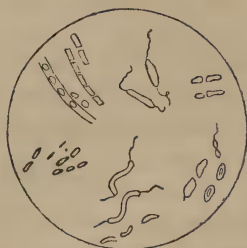


FIG. 4.

Bacteria.—Bacteria are short, thick, rod-shaped micro-organisms. Some bacteria possess cilia or flagella at one or both ends, which are rounded. They are capable of a certain amount of locomotion in fluids, which is one of the distinguishing features between them and micrococci. The power of locomotion is by the use of the flagella, and the ability of these special micro-organisms to move freely about seems to be favored in many cases by the presence of oxygen.

Bacteria multiply by transverse fission in a manner similar to the multiplication of micrococci. The longitudinal fission

does not as a rule occur in bacteria. The ends of the bacteria are slightly rounded. Bacteria are found in the torula form or in zoogloea, and, while it is possible to find in bacteria some of the other varieties belonging to the arrangement of micrococci, the three forms which have been mentioned will include the greater majority.

Bacilli.—Bacilli are rod-shaped micro-organisms with a square cut extremity. These rods are also invested with a cellulose membrane precisely the same as micrococci and bacteria.

Bacilli multiply by fission and by the endogenous formation of spores. Some varieties possess cilla or flagella by the use of which they are capable of locomotion. Bacilli are found in long filaments either straight or curved, but do not as a rule form into zoogloea masses, as micrococci or bacteria; they are destroyed if submerged under boiling water, and are also paralyzed by freezing, while the spores are not destroyed. The most important fact to remember in connection with bacilli is their multiplication and development by spores. In the long axis and in the rod-shaped bacilli a bright spot becomes visible, which soon enlarges until the tense expansion of the investing cellulose membrane causes it to burst, and the spore is set free. The number of cells in the protoplasmic mass will determine the number of spores liberated, and the presence of oxygen seems to be necessary in certain bacilli to excite this method of multiplication. It is said of anthrax bacilli that they never germinate by spores unless they are freely exposed to oxygen. Moisture is also necessary for spore development. If the spores which have developed from rod-shaped bacilli in the manner already described have sufficient nutrient pabulum, they will germinate again into bacilli; deprived of this, they remain as spores. It is to be remembered as an important fact bearing upon putrefaction in wounds, that while heating, freezing, drying, exposure to chemical irritants, etc., will destroy micrococci, bac-

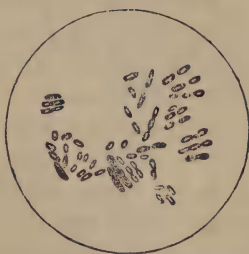


FIG. 5.—SPORE DEVELOPMENT
IN *BACILLUS ANTHRACIS*.

teria, and bacilli, the spores of bacilli seem to be able to withstand all such influences, and that after a lapse of an indefinite period of time the spores, under favorable conditions and circumstances and in suitable soil, can be made to germinate into bacilli. The explanation of this inherent power belonging to spores to resist influences which kill micrococci, bacteria, and even the bacilli themselves, is found in the anatomical and physiological arrangement of a double investing sheath or membrane enveloping the spore, an outer cellulose and an inner adipose membrane. The double membrane acts as a poor conductor of heat to the contents of the sac, and hence influences which destroy the vitality of micrococci, bacteria, and bacilli themselves do not affect the vitality of the spores. Thus bacilli, like micrococci and bacteria, multiply by fission, but the fission is usually transverse; but they also develop by spores, which may be said to be the important and distinguishing feature of the life history of bacilli.

Bacilli are invested by a cellulose membrane, and are capable of locomotion by the use of cilia or flagella, by means of which they can dart, navigate, and pirouette in fluids and solids over the field of vision.

Bacilli, like micrococci and bacteria, are destroyed by exposure to boiling water, by freezing, by certain chemical irritants, but the spores of bacilli are not destroyed by these influences. The spores, to develop into bacilli, require generally oxygen and always moisture. If the spores have a suitable soil they will germinate into bacilli; if not, they will remain inactive until a time when circumstances and conditions are favorable for their development.

If in any fluid, therefore, which has been subjected to a temperature of boiling water for a few moments, and later, subsequent to the boiling, there appear micro-organisms, these organisms will have developed from the spores of bacilli, because the micrococci, the bacteria, and the bacilli have all been destroyed by the temperature of boiling water.

Fungi.—Blastomycetes. By fungi are meant certain micro-organisms which are found to be the cause of putrefaction. The

fungi are contained in the air, water, tissues, soil, etc., the most common one of which is the *penicillium glaucum*. This is seen upon cheese and is popularly called the cheese-mold. Its spores are found in the air, and they are a common cause of contamination in cultivations of special micro-organisms and of putrefaction in wounds. In this flask is seen a typical cultivation of this mold.

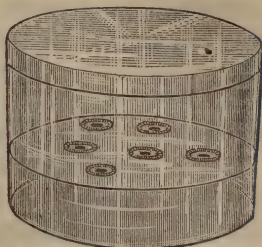


FIG. 6.—CULTURE OF *PENICILLIUM GLAUCUM*.

The *aspergillus* is another mold which is quite common. There are several varieties of this species. In this flask is the *aspergillus albus*, in the other the *aspergillus niger*.

Torula is another mold, and is commonly known as the yeast-plant. It consists of numerous cells which are larger than micrococci. *Torula* or yeast-plant multiplies by the budding of the mother cell, and possesses the power of separating sugar into alcohol and carbonic acid. It is the micro-organism which produces alcoholic fermentation. The several varieties of *torula* are beautifully illustrated in these flasks. The specimens were prepared by me from some cultures which I obtained in Edinburgh.

Besides these molds there are a great many others concerned in putrefaction, a large number of which are under cultivation upon these different media. In addition to the molds there are some micro-organisms which I have thought best to introduce in this connection, because the special micro-organisms involved in a specific fermentation can then be grouped together in one place. Wherever there is fermentation in animal matter it is designated putrefaction. Pasteur assigns the reason for calling this variety of fermentation putrefaction "because of the evolution of the gases, which are derived from sulphur and phosphorus, due to the decomposition of fibrine, of albumen, of blood, of gelatine, and of the substance of the tendons."

Among these micro-organisms may be mentioned the *vibrio*, which appears as a curved rod-shaped organism. It is often

found more or less tortuous. This germ is concerned in the lactic fermentation of milk, just as the torula is concerned in the alcoholic fermentation. One peculiarity of the vibrio is that it does not thrive well in oxygen, which gas is so essential to most micro-organisms. This fact explains the reason why milk, for example, if exposed to fresh air in a cool place will for a long while resist putrefaction.

In these test-tubes which contain milk has been introduced a certain quantity of a saturated solution of boric acid, and this milk has thus been kept for weeks in this laboratory free from any putrid changes.

The vibrio of butyric acid, another micro-organism which concerns the surgeon, consists of cylindrical rods. It lives without air, and air prevents the butyric fermentation with which this micro-organism is associated.

Still another micro-organism, also of interest to us, is the mycoderma aceti, a beautiful growth of which is in this bottle. It is a well-recognized fact that in a half-filled bottle, with the cork withdrawn, wine will become sour. Now, the essential difference between wine and vinegar is that the latter contains no alcohol, which is the essential factor in the manufacture of wine. When wine is distilled, alcohol is obtained; when vinegar, acetic acid. The mycoderma aceti is the ferment of vinegar, and this fungus is deprived of all functional activity by exposure to a heat of 60° C. No wine subjected to such a heat and hermetically sealed will ever become sour; but let it be exposed to the ordinary air it will soon become sour, because the mycoderma aceti which exists in air has gained entrance to the wine (which before this was prevented from becoming sour owing to the fact that the micro-organism was destroyed in the heating). Connoisseurs always keep their wines in bottles lying flat, and never standing. The reason of this is obvious, as Pasteur has pointed out, when wine is kept in bottles standing there is a chance for air to filter through a dry and permeable cork, and then again there is a space in the neck of the bottle which contains air derived from filtration through the cork, and upon the surface of the wine the mycoderma aceti can

produce the fermentation which characterizes this variety of micro-organisms. If, on the other hand, the bottles of wine are kept lying flat, there is no space for air to collect in the neck of the bottle, and the cork being constantly moist expands instead of shriveling, so that the mycodermae aceti contained in the wine are deprived of a proper amount of oxygen. The small amount of air which filters through the cork under these conditions is appropriated by oxidizable constituents of the wine. The mycoderma aceti is a most common micro-organism, found in the air and in wine in very great abundance.

2. *The action of these micro-organisms upon fluids, solids, inorganic matter, and upon living tissues.*—In the consideration of the first division of our subject an attempt was made to discuss the existence of micro-organisms more from a morphological than from a physiological point of view. In treating the second division of our subject an attempt will be made to confine the discussion to the functional activity of these micro-organisms, and in doing this the action of these micro-organisms will be discussed first upon the fluids, then upon solids, then upon inorganic matter, and finally upon living tissues.

It has been already demonstrated that micro-organisms exist in the air, and if now any fluid—for example infusion of beef—be allowed to stand a few days in several test-tubes, the fluid will become turbid; later molds and bacteria will be found upon the surface, and the color of the fluid unmistakably changed, and the odor very offensive. In common parlance, it is said that the fluid has decomposed. This fluid has been examined by the microscope, and it is swarming with bacteria moving all over the slide by the use of the cilia or flagella. This simple experiment is repeated daily, and it is perfectly well known that any fluid left standing in a vessel will decompose. To show now that the cause of the putrefaction is due to the action of these micro-organisms in the air, and not to the air itself, I will here repeat the experiment which has been made by Professor Tyndall. This scientist constructed a box, an exact model of which I have had made in London for the very purpose.

This box, then, which contains about two thousand cubic inches, is constructed with a glass front. Upon the sides are two win-

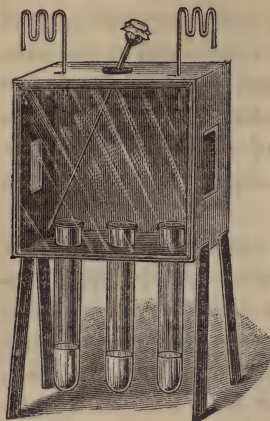


FIG. 7.

dows directly opposite to each other. Upon the top is a small hole about two inches in diameter, which is made air-tight by a piece of India rubber stretched over the aperture and sterilized cotton under it. The interior of the box is smeared over with glycerine to collect the dust as it settles. A long, slender pipette is thrust through the center of the opening closed by the India rubber. The upper part of the pipette is patent, and fluid is poured into the test-tubes in the box by this pipette. On both sides of the pipette and a short distance from it are two bent

tubes which connect the interior of the box with the external air. The tubes are bent so as to catch and hold any particles in the air which might be carried by currents of air set in motion by the difference of the temperature between the interior of the box and the external air. The floor of the box is perforated to receive three air-tight test-tubes into which has been poured the fluid that is to be exposed to the action of germless air. After having allowed the box to remain undisturbed for ten days I closed it, and by placing a lamp in front of one of the side windows in a dark room one could see that the rays of light sent out from the lamp traveled across the box and emerged from the opposite window and were visible as they radiated from this window into ethereal space. The fact that a beam of light was visible in the box between the two windows was proof that the air within the box was full of micro-organisms which appear as floating matter. A few days later I applied the same test with the electric light, and found that, while the beam reflected from the lamp was visible from the burning flame to the side window of the box, and from the

opposite window into ethereal space, the beam was not visible in the passage across the box from window to window. This was proof that in the interior of the box the air contained no floating matter. I shall have to ask you to accept this physical law which Professor Tyndall so beautifully illustrates, that the pure gaseous portion of our atmosphere is incompetent to scatter light, hence the air contained within the box was not competent to scatter the beam of light from window to window because the air was purely gaseous, hence optically pure, and did not contain floating matter, which is the *sine qua non* for the passage of a beam of light.

To return now to the box, in which is contained only gaseous air with no floating matter except such as clings to the interior of the box, which is painted over with glycerine to catch the few particles of organic matter which by subsidence gravitates to the bottom and sides of the box.

I introduced the fresh beef infusion by pouring it from a sterilized and clean graduate into the empty tubes through the pipette. The test-tubes were then immersed in an oil bath which was boiled for a few minutes. The uncondensed portion of the vapor which arose from the fluid in the tubes passed out through the bent tubes on the top of the box. Before the boiling was stopped plugs of sterilized cotton wool were inserted in the open ends of the bent tubes, so that the slight current of air caused by the cooling of the air-chamber would not attract the outer air with its floating matter, but after a while the plugs were removed. In this manner the fluid within the test-tubes was freed from micro-organisms, and the air within the box contained no organic matter.

I shall now call attention to the fluid within these protected test-tubes, and it is observed that the fresh beef infusion in each test-tube is perfectly clear and transparent, just as it has been for weeks and weeks, and that there is not the slightest turbidity or mold present, as is the case in every one of the test-tubes which was not protected from the air which contained organic matter. The mere presence of limpidity need not be accepted as a proof of the absence of bacterial life in the fluid

contained in these protected tubes, since there are other proofs which are absolutely incontrovertible. I asked Dr. Biggs, the instructor in the Carnegie Laboratory, who is a skilled microscopist, to examine this fluid with the most powerful lens in the laboratory, and he failed to find the slightest trace of organic life in the fluid. By repeated attempts no cultivations can be made from this fluid, as it contains no life from which life can be developed. If life exists in this fluid, cultivations of the organisms from it in a nutrient pabulum would soon develop life. If further proofs of the absence of bacterial life are needed, the concentrated solar beam will be found incompetent to scatter light, and hence living organisms can not be present in this fluid; and finally, the demonstrative proof by the use of Nicol's prism would cause any particles of organic matter contained in this limpid fluid "to flash out with greater force because of the increased darkness of the space around them."

The other tubes, which were not protected from air containing micro-organisms, exhibit changes which indicate the presence of living organisms. The fluid is turbid; the microscope reveals colonies of micro-organisms; these germs have been cultivated in suitable soil and they develop and grow; the use of the concentrated solar beam and Nicol's prism is attended with vastly different results from the former experiments.

If this box is examined years hence, it will be found that the beef infusion in the test-tubes is clear and free from any signs of decomposition, just as it was months ago when introduced into the tubes. Subject this fluid to the test of the microscope, and the microscopist will be unable to trace any evidences of bacterial life. The test of the solar beam is a more accurate one from a scientific point of view than even the microscope itself, because the beam of light will detect what the microscope is unable to reveal. The condensed solar beam reveals to us a world held in suspension, too infinite for the microscope with its limited powers, and demonstrates that there is a realm of organic life beyond the power of the microscope to unfold.

Examine now in contrast fluids outside of the box, in tubes

put up at the same time, and they are turbid. The practical conclusion which is to be drawn from the behavior of these fluids contained within the test-tubes, some of which were exposed to the external air and some of which were placed in the box protected from air which contained organic life, is this, that the micro-organisms which float in the air are the cause of putrefaction, and if the fluids can be protected from the air containing micro-organisms they will never putrefy; if exposed to ordinary air they will always putrefy. Putrefaction, then, is caused by micro-organisms contained in the air and not by the air itself.

In proof of this startling assertion I have here some pipette-bulbs which were filled by me during the past summer. They contain infusion of beef and of turnip, and the fluid is as pure and uncontaminated as the day when they were hermetically sealed during ebullition. This fluid will keep forever without putrefaction, but let a single micro-organism gain entrance with the air through an opening too diminutive to be visible by the naked eye, and in a few hours the infusion of beef will become slightly turbid and be swarming with bacteria. Out of the twelve tubes thus filled and hermetically sealed during ebullition, only one has shown signs of decomposition, and this is due to an error in manipulation on my part. These tubes I sealed in Professor Tyndall's laboratory at the Royal Institute in London, and I am indebted to Mr. Cottrell, Professor Tyndall's assistant, for his kind attention and courtesy. The infusion in these pipette-bulbs will keep forever pure and uncontaminated. At the meeting of a scientific body held in England during the past summer, Mr. Cottrell exhibited three pipette-bulbs which were hermetically sealed by him ten years ago, and while carrying them from the Royal Institute to Cardiff the end of the nozzle of one of the tubes was broken off, and the opening was visible only by the closest examination. In three hours the infusion which had kept clear for ten years became turbid. This

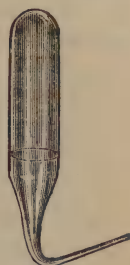


FIG. 8.

accident, as provoking and disappointing as it was, illustrates in a most forcible and impressive manner the fact that decomposition in a fluid is caused by the entrance of the germ-laden air, and that the quantity of the air is unimportant, while its quality is significant. Pasteur has shown that such flasks may be opened for a time without any turbidity appearing, and suggests, as an explanation of this fact, the non-continuity of the cause, for these germs appear in clouds, and if the flask is opened in the interspace of a bacterial cloud, decomposition will not occur until germs come in contact with the fluid. Thus my statement of the law is amply proved. It is not sewer gas, then, that provokes epidemics, but the germs in that medium which produce the mischief; so that if the germs be destroyed the gas is perfectly innocuous.

The effect upon living tissues is precisely the same as upon sterilized jelly or upon the infusion of beef. If any of the

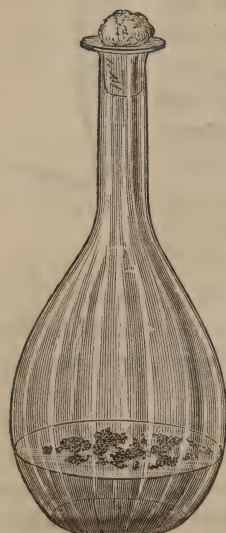


FIG. 9.

germs in the air fall upon an unprotected wound, just so sure will decomposition take place. Further proof of the assertion already made, that fluids which are kept from the air containing micro-organisms will not decompose, may be adduced by the examination of these six test-tubes which were filled with Koch's jelly. They are as clear and transparent to-day as they were when hermetically sealed in this laboratory last summer. This experiment may be repeated over and over again and with invariable results. In the hermetic sealing of tubes in the laboratory the conditions are most favorable for the entrance of germs because they are there present in great abundance. Now, in this flask may be seen growing innumerable forms, which have gained entrance to this

jelly through the sterilized cotton plug which has never been removed since the flask was filled with Koch's sterilized jelly.

The clinical fact that germs capable of producing putrefaction may gain access to a wound through a surgical dressing is thus forcibly shown. Hence it is of the highest importance that the surgeon should take great care in the selection of his antiseptic dressing, should display much ingenuity in the manner of its application to different wounds, and should exercise mature judgment in regard to the proper time of a renewal of the dressing.

Meddlesome interference with a wound is just as productive of mischief as protracted delay. A surgical dressing should be changed after a suitable period has elapsed, and at any time when the indications are present of some disturbance in the wound, but on the other hand it should not be disturbed within a week if the wound be aseptic, no discharge be present, and no discomfort be experienced.

Take any wound in yonder hospital and expose it to the air containing micro-organisms, and putrefaction will occur upon the surface of the wound. The area and extent may be influenced by circumstances, for there are, of course, exceptions to this law; but let the air be foul and the wound be kept unclean, and decomposition will be sure to follow, and sepsis will be the result.

Professor Lister has beautifully illustrated this in demonstrating that air contained in the pleural cavity, which has passed through the lungs, will never produce putrefaction if it comes in contact with an internal wound. The explanation of this is found in the fact that air which has been filtered of germs in its passage through the lungs has become innocuous. The air in the pleural cavity having passed through the air passages and lungs, one of whose functions is to arrest dust, has been prevented from entering the tissues. But ordinary air coming in contact with an internal wound would be most serious. As you see, the lungs act in the human being in the same manner as the box acts in the experiment just presented for your consideration. It makes little difference whether you employ the strict antiseptic dressing of Lister, or the eucalyptus oil of Schulz, or the continuous irrigation of bichloride of mer-

cury as practiced by Schede, or the naphthaline dressing of Fischer, or the salicylic method of Thiersch, or the open method of Wood, as long as the great principle is observed of preventing the action of the micro-organisms contained in the air from causing putrefaction in a wound. All these different methods of surgical dressing observe one grand principle, which is the prevention of putrefaction, just as all roads lead to the king's highway.

The study of fermentation, as it affects surgical wounds, would be incomplete without some reference to the way by which Pasteur was led into an investigation of this great theory. Pasteur's studies, up to the time of his appointment as Dean of the *Faculté des Sciences* at Lille, had been devoted to chemistry and molecular physics, and it was in the elaboration of these sciences that his great reputation was made. He explained "the influence of molecular dissymmetry of natural organic products," and pointed out the difference which exists between the chemistry of inorganic and organic matter. When he was made Dean of the *Faculté des Sciences* at Lille, he resolved to enter upon the study of fermentation. The manufacture of alcohol from beet-root and corn was the chief industry of that part of France. His discovery of the law of molecular dissymmetry and its relation to microscopic organisms suggested to his mind the fact that fermentation might be due to microscopic organisms. With this end, he began his studies as to the nature of fermentation, the result of which, in their application to surgery, has proved an inestimable boon to the human race.

The subject of the relations which micro-organisms bear to the ætiology of disease would be incomplete also without an allusion to the process of fermentation. In speaking of the existence of micro-organisms, mention was made of a class chiefly concerned in fermentation. Now, as a wound is liable to be contaminated by the micro-organisms, which produce fermentation, it is necessary to discuss this subject as briefly as is consistent with its relations to wound-treatment. In order to understand what changes may occur in a wound on account of the access to it of certain micro-organisms contained in the air, which will cause

fermentation, it is obvious that attention must be called to the special action of these micro-organisms upon fluids and tissues.

The best example, and the most familiar one to illustrate fermentation, is the process of wine-making. During my sojourn in Heidelberg I became much interested in the manufacture of Rhine wine, and was afforded ample opportunities for a study of this interesting subject through the kindness of Mr. Ellmer, who controlled large vintages. If any of the fresh fermented grape-juice is taken from the wine-vats and examined under the microscope, it will be found to contain a small micro-organism which is called *torula*, a beautiful specimen of which I show here sprouting upon sterilized bread-paste. This micro-organism I sowed in this culture-medium during the past summer, having collected it from the highlands in Scotland. It grows under favorable conditions, and buds in a most luxuriant manner. A visit to the champagne district at Epernay, near Paris, will also reward one with much knowledge upon this fascinating subject. Why grapes when crushed and left in open vats would ferment was a problem which remained unsolved for centuries, until Pasteur made this great discovery. He showed that, when the grapes were ripened sufficiently for the wine presses, upon the skin of the grapes, and upon the stems, were found infinitesimally small particles which, when examined under the lens of the microscope, were seen to be living cells or micro-organisms, and that when these micro-organisms were sown in the juice of the grape the *torula* grew and developed in rich profusion. The growth of the *torula* in the grape-juice was associated with active fermentation. During the past summer, while visiting with my friend Dr. Glover, of London, an old and interesting town in a dairy district in England, I saw in the oldest chemist shop in Great Britain an advertisement of a solution for preserving milk. I was told by the present chemist that the solution was sold in large quantities to the farmers in the vicinity. Upon inquiring, I found it to be only a saturated solution of boric acid. If milk is permitted to stand in a glass it will soon become sour; but if there is added to the same quantity of milk which is contained in a

glass beside the other a little of the boric acid it will be found that the lactic fermentation will not take place, and that the milk will not become sour. The reason why this milk in the first glass ferments is owing to the development of the micro-organism known as vibrio, which has been mentioned among the list of micro-organisms, and which is present in this test-tube, and the reason why the milk in the second glass remains pure and sweet is on account of the absence of the vibrio which causes the lactic acid fermentation.

If a pair of shoes be exposed to the air for a length of time the shoes will be covered, as these shoes upon the table are covered, with the mold (*penicillium glaucum*), which has simply found a suitable soil for its development.

Expose a piece of raw meat upon a warm day to the air and soon it will be foul and swarming with bacterial life; keep the meat from heat and expose it to cold and this will keep the meat fresh, because cold checks the development of the bacteria which produces the fermentation. I have often been astonished to see how for weeks fish, joints, and fowls are thus preserved by suspending them in a cold atmosphere upon the Atlantic steamers. Let these perishable articles of food be hung for a single day in a room with ordinary temperature of one of our July or August days, and they would soon swarm with bacteria. If the meat is where flies can gain access to it and deposit their eggs, very soon maggots will be found upon it. The same is possible though not probable in the case of an open wound. The surgeon must protect it from the assault of these innumerable micro-organisms, or the wound will be the birth-place of millions of germs which will cause it to undergo putrefaction. Only during the past week I saw a patient with a bed sore, and maggots were thick upon the surface of the wound; when the patient was brought under proper influences, the wound became free from living organisms. The same bacteria that causes decomposition in the piece of raw flesh will attack the wound; the same micro-organism that produces fermentation in milk or in wine, or that grows upon the old pair of shoes, will be sown upon it.

3. *The specific action of micro-organisms to produce surgical diseases.*—In order to prove that a special organism is the cause of a special disease, it is necessary that every investigation into the etiology of a disease must conform to a certain Procrustean method, which, in brief, is enunciated by Koch as follows:

(1) The micro-organism must be invariably found in the blood or tissues of the diseased animal. (2) The same micro-organism must be capable of artificial cultivation for several generations. (3) The artificially cultivated micro-organism, when introduced into an animal, must produce the same disease as that from which the germ was derived, and this same micro-organism must finally be found in the inoculated animal.

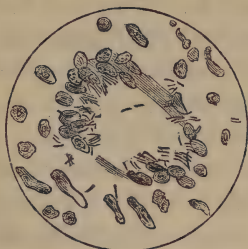


FIG. 10.—BACILLI TUBERCULOSIS IN TISSUE.



FIG. 11.—GONOCOCCI IN GONORRHEAL Pus.

Without any investigation conforming to these propositions the case can not be said to be proved. These conditions have been verified in anthrax bacilli, in the bacillus tuberculosis, in cold abscess, in the micrococcus of erysipelas, and in the gonococcus of specific urethritis.

There are also a few other surgical diseases in which, while the facts are not proved, they are extremely probable: leprosy, glanders, farcy, gangrene, pyæmia, and septicæmia. All these special organisms are here under cultivation in these glass tubes. There are, of course, other diseases not surgi-



FIG. 12.—MICROCOCCI OF Erysipelas.

NOTE.—I am indebted to Mr. Shively for these drawings.

cal where the cause of the malady is clearly proved to be due to the special micro-organism.

The cholera germ, the typhoid fever, the diphtheria, the pneumonia, and other germs are in these tubes. These cultures have been made by Dr. Biggs, to whom much credit is due.

In this department of surgery there is a vast field of unoccupied ground, and it is to be hoped that the Carnegie Laboratory will be the birth-place of the discovery of other micro-organisms which can be shown to stand in a causative relation to surgical disease. It might be interesting in this connection to refer briefly to some of the better known micro-organisms concerned in closed suppuration; but a full discussion of this subject will be referred to a future article. There are in these test-tubes, and upon these culture-plates, cultivations of the micro-organisms found in the different acute suppurative processes; among which the more important ones are staphylococcus pyogenes aureus and albus, and micrococcus pyogenes tenuis, streptococcus pyogenes, staphylococcus cereus flavus and albus; also, the micrococcus of Fehleisen, which has been demonstrated to be the cause of erysipelas, the gonococcus of specific urethritis, micrococcus found in noma, on cancrum oris, and many others of great surgical interest.

There are many signs which betoken clearly that in the United States the profession of medicine is at the beginning of a great epoch in medical education, and that the scientific part of medicine is to be brought forward, and that it will receive the prominence which is its due. This object is attainable only through the advantages which scientific laboratories offer to the profession. The Sloane laboratory at Yale, the Carnegie and Vanderbilt laboratories in New York, the biological laboratories at Princeton and Harvard and Baltimore, besides several new ones in the process of building, all speak in unmistakable terms of the great interest which is centering in medical education.

4. *The methods which the surgeon possesses to destroy micro-organisms in wounds.*—This final division of our subject natu-

rally leads us to a consideration of some of the important principles involved in wound treatment. In this connection, however, only a general survey of the subject can be made, for space and time do not permit of a discussion. From what has been said and demonstrated this evening, it is obvious that micro-organisms are the causes of putrefaction, and that a surgeon to avoid putrefaction must destroy the life of these germs without producing any injurious effect on the tissues. In the discussion of the anatomy and physiology of these micro-organisms it was stated that boiling, freezing, and certain chemical irritants destroyed the vitality of micrococci and bacteria and bacilli, but not always the spores of bacilli. It is evident that neither boiling nor freezing water could be employed by a surgeon during an operation, but he must look to the efficacy of some chemical irritant which will be innocuous to living tissues to accomplish this result. Koch has demonstrated that a solution of one to three thousand bichloride of mercury is quite sufficient to destroy all the micro-organisms, including the spores of bacilli. The same investigator has also shown that a five-per-cent. solution of carbolic acid will destroy nearly all the varieties of micro-organisms, and even some of the spores of bacilli. Hence it is obvious for all practical purposes that these germicides may be used with great certainty. It is a noteworthy fact that carbolic acid is volatile, which can not be said of bichloride of mercury. In the open treatment of wounds the very highest type of antiseptic surgery is found. The frequent use of carbolic-acid solutions renders the soil unsuitable for the growth of micro-organisms; the unobstructed flow of the discharge from the wound does not permit the secretion to become putrid; the exposure of the wound permits evaporation, which renders the discharge too highly concentrated for the favorable growth of these germs; and finally, as Pasteur has pointed out, this same free exposure by the supply of oxygen to the micro-organisms prevents them from disorganizing and breaking up the albuminous compounds in their struggle for one of the essentials of their being. The preservation of the albuminous compounds diminishes, and even prevents, the processes of putrefaction in a wound. An exposure of the

wound lessens the chances of decomposition by causing the wound to become dry. I have often been criticised as inconsistent in advocating antiseptic surgery and at the same time recommending in certain wounds the open method. There is no real inconsistency at all. I believe in primary intention whenever possible, and consequently in closure of the wound ; but there are wounds where primary intention can not under any circumstances be secured, and under such conditions a wound may be left open for repair, while antiseptic surgery is at the same time practiced.

I have seen during the past few years several cases of engrafted diphtheria upon a stump, when an epidemic prevailed in the immediate neighborhood. All of the wounds so complicated did well by free exposure to the air. In these cases the oxygen in the air interfered with the vitality of the putrefactive bacteria.

In some forms of bacteria, oxygen, on the other hand, is essential to their life. Hence, it should not be understood that antiseptic surgery be limited to a Lister dressing, but that antiseptic surgery is clean surgery, and that to Sir Joseph Lister more than to any other surgeon belongs the honor of having pointed out the cause of putrefaction in wounds. Another great advantage to be derived from the open treatment of certain wounds, where primary intention can not be secured, is the beneficent influence of the rays of the sun. Ten years ago I was in the habit of giving a stump a sun-bath. Now, again, quite recently, a scientific man engaged in bacteriological studies has demonstrated that certain pathogenic micro-organisms were killed by prolonged exposure to the rays of the sun. This reconciles the practice with the subsequent facts.

A most important study in connection with this subject is the selection of a suitable antiseptic. In these flasks which contain sterilized bread-paste I have made the paste succulent with different antiseptics kindly prepared by Mr. Rice : Carbolic acid (1 to 20), bichloride of mercury (1 to 3000), iodoform and naphthaline (saturated solutions), also sulphurous acid and many others. In these flasks, cultures have been made, and points of

infection have developed according to the strength and value of the different germicides. It does not follow that the most powerful germicide is the best antiseptic for wounds. The selection of one can be made by the surgeon after testing the merits of each as regards the germicidal power, and next as regards the effect upon living tissues.

In conclusion, if any surgeons present are still skeptical as regards the germ theory of inflammation, I can earnestly recommend them to take up the subject for investigation, and pursue its study along the same lines that I have pointed out in my demonstrations to-night, and I have no fears as to the conclusions at which they will arrive.

In this vast country, where surgeons are untrammelled by old and worthless traditions, where Continental propinquity does not arouse feelings of national jealousy, where a liberal, unprejudiced, and receptive condition of mind enables us to accept every good from every source, where unequaled laboratory advantages with rich abundance of material are offered, where earnest and enthusiastic investigators are fast coming to the front, we would predict a great and glorious future for American surgery.

With a view to promote this great future in American surgery, I would recommend the construction of an ideal operating theatre in connection with every hospital, and independent of the main building. The theatre to be so constructed with floor, side-walls, and ceiling as to permit the discontinuous inrush of hot steam a few hours before every operation, and at the time of the operation to have the room brought to a proper temperature for surgeon and patient. This would afford the surgeon an opportunity to operate in an air uncontaminated by living organisms. It would afford to the patient absolute protection from his unseen enemies, which hover over him at such a crisis. I would recommend for the accomplishment of this great future for surgery the use of antiseptic solutions prepared after chemical formulæ, and employed in the way of constant irrigation from the beginning to the end of the operation. This would afford protection from any local contamination in the wound itself.

Further, I would suggest the use of approved antiseptic dressings, which can be rendered invulnerable to the attack of any of such micro-organisms as these before us. Again, I would emphatically advise the employment of instruments so made as to permit of special disinfection in glass trays during the operation. Instruments should be made for this purpose with smooth metallic handles to withstand the action of the solutions in which they should lie before and during an operation. Still again would I recommend the use of thoroughly new and disinfected sponges, blankets, sheets, towels—everything which comes in contact with surgeon or patient—and last, not least, would I insist that all assistants and nurses be subjected to the most rigid disinfection.

Drainage.—In every large wound some provision should be made for drainage, and this object can be obtained by the use of suitably-prepared tubes, as practiced by Mr. Lister, or by a method known as capillarity, which was introduced by Professor John Chiene, of Edinburgh. The former method is specially adapted to large wounds, and the tubes can be made of red rubber, which is free from sulphur; the black tubes, owing to the presence of the sulphur, stain the dressings. The tubes in question have small apertures cut upon them at short distances from each other. They should be well introduced into the bottom of the wound cavity, and should not project beyond the surface of the skin. They can be shortened as the wound cavity fills up, or can be removed in a few days.

The method of drainage by capillarity consists of strands of cat-gut. Neuber's decalcified tubes and McEwen's chicken-bone drainage-tubes are apt to collapse or to become absorbed before their work is completed. Horse-hair is extremely useful in such wounds as are made in osteotomy, or where the extent of the wound is not great. The cat-gut is absorbed after its function has been completed, and is the best kind of drainage-tube for wounds of the brain. The cat-gut drain is not to be employed in any wound where there is suppuration, for the blood or serum can only be drained by means of these threads. The joints can be best drained by capillarity by horse-hair,

which is to be entirely withdrawn from the joint, and never left as is cat-gut in a wound cavity. Whatever kind or method of drainage is employed, the material to carry out drainage should be kept in carbolic acid (1 to 20), and should be dipped into bichloride of mercury (1 to 2,000) before being introduced into the wound.

I have lately used ivory drainage-tubes because the rubber tubes would often collapse, and in two cases within a month I have found, in gently withdrawing the latter, that a small piece of the end would tear off and be left behind in the cavity of the wound, to the bottom of which the end had become adherent. In the two cases just mentioned the wounds were opened, the pieces removed, and the wounds healed by granulation. To prevent this tearing off, and also to avoid the collapse of the tube, led me to resort to the ivory drainage-tube, and so prevent the mishaps just mentioned. These ivory tubes can be obtained of Mr. Ford, who has kindly afforded me some valuable assistance in my search for an ideal system of drainage in large wounds.

This variety of tube, previously bored and polished interiorly as well as exteriorly, I have employed with great satisfaction. In the first place, this tube can be made perfectly aseptic at any time and at all times, and thus may be used in any number of cases. In the second place, they will neither collapse nor soften as do the chicken drainage and the red rubber tubes. In the third place, they will neither act as irritants nor break off on withdrawal as do rubber tubes. In short, the only disadvantage which presents itself to my mind is the inability of curtailment when the tube requires to be shortened day by day. The compensatory advantages, however, far outweigh this difficulty.

Finally, nurses and assistants in an operation should be thoroughly imbued with an unswerving faith in antiseptics, and they should be willing to carry out with religious zeal the necessary rites of personal cleanliness in every operation. With all these adjuvants, and I include also perfect anaesthesia, our science can extend to suffering humanity such beneficent aid as our forefathers, with their crippled resources, could never have given.

The acceptance of the germ theory of inflammation makes possible the opening of joints, the wiring of compound fractures, the resections of the stomach and intestines, the removal of the kidney, the extirpation of the spleen, the washing out of an abscess of the lung, the extirpation of tumors from the brain, the removal of gall-stones, and the opening of the peritoneal cavity, to say nothing of a long list of operations of this character, which, but a decade since, were considered not within the pale of lawful surgery. These measures for relief are now adopted with almost the certainty of uniform result. Before the principles of antiseptic surgery became deeply rooted in the minds of surgeons, patients were doomed to unnecessary suffering, the avoidance of which in these days is the masterly triumph of the grandest profession in the world.

CAUSES OF FAILURE IN THE TREATMENT OF URETHRAL STRICTURES BY ELECTROLYSIS.

By ROBERT NEWMAN, M. D., of New York County.

Read November 20, 1885.

“As the authority in electrolysis, you ought to protest against its indiscriminate use in urethral strictures. This, when bunglingly done by non-experts, only causes failures, and even mischief.”

This remark, by an eminent surgeon, was addressed to me nearly a year ago. As a criticism, it was the first intimation to me that failures in my treatment of strictures by electrolysis ever occurred. My uniform success in many hundred cases; the favorable reports of cures by many surgeons near and far off, as well as by friends and entire strangers; my observation of unrelapsed cases for many years after treatment; my detailed description of the *modus operandi*; the answers given to all the queries of correspondents—all lulled me into the belief that failures were impossible. However, the words of my friend were startling, and so I resolved upon investigation. The result I will now state.

I crave pardon for referring to the dates of my connection with the operation; the reference will be very brief. My first experiments were made in the year 1868, and they were trials in more senses than one. My present method of treatment was adopted in 1870, and from it there has been no deviation. My first paper on the subject was read in March, 1872, and was followed by another in 1874 before the Medical Society of the State of New York. My opinions and practice then promulgated have not since undergone any change. My subsequent

articles merely contain fuller observations, details of bad cases, improvements of instruments, and more complete statistics. To the last class belongs a table of one hundred cases which remained under observation for periods ranging from three and a half to eleven years, without relapses having occurred up to the present time, which were dismissed as cured. My report of the second hundred cases is nearly ready, showing similar results; besides these, many other cases heard from have been cured by me, but these need not be credited to my good fortune.

It will be observed that I have been practising my method of electrolysis for fifteen years with unexceptional success; besides there are many surgeons of repute who have reported only good results in a smaller number of cases. Such successes are undeniable facts. Under such circumstances need it excite wonder that, having heard of no failures, I should believe only in the successes.

There may be complications, in addition to the stricture, to prevent a cure, for example, a chronic urethral abscess, which irritates and presses on the urethra. If a patient with such a complication will not give sufficient time to the treatment, he may be relieved, but will not be cured. Such cases, therefore, should not be numbered among the failures. Complications, intercurrent accidents, or other diseases also may exist, which must be excluded from the subject under consideration. Now that I have been watching for cases of failure, I find that some practitioners do not succeed as they should. But a good method is not a failure because certain operators do not succeed, and the question accordingly arises, *Why* are some operators not successful? I answer because there is "*bad management*." The causes of such bad management may be comprised under three heads: 1. The operator himself. 2. Wrong diagnosis. 3. Faulty instruments.

1. *The Operator*.—In order to succeed, the operator is expected to be an accomplished surgeon and electrician. If he be an expert of many years' practical experience in this line, so much the better. But, for our purpose, he must be at least a good surgeon, who is familiar with the handling of genito-

urinary instruments, and master not alone of the easy introduction of instruments into the normal urethra, but he must also be able to guide his bougie safely through all parts of an abnormal or pathological passage. This is not so easy, and many general practitioners may fail in such attempts. There are masters of that art, but they will not succeed with our operation if they be not experts in electricity at the same time. The knowledge of the theory of electrolysis belongs to the elementary course taught in schools and literary colleges, and can be found in any text-book on physics and chemistry. The student of medicine is expected to know all about it, before he is qualified to enter a medical college. Now, in reality, do our students know all this, and have they had such preliminary education. The true state of affairs is best expressed in the language of one of my medical friends, who at first always advocated a high standard of preliminary education, and a prolonged graded medical course; but later, when the same gentleman became a professor in a provincial town, his ideas suddenly changed, and he spoke as follows: "You see, our students do not need the higher and special branches of medicine, neither would they understand them, for they have no preliminary education; they come here from their village, some direct from the farm and plow; they go back again to their village for general practice, where it is sufficient to treat fevers, zymotic diseases, bowel-complaints, and manage obstetric cases. These branches we teach them, and if anything else occurs they can come to us for consultations and operations." This state of affairs shows that the majority of medical men do not know anything of electricity. Others, with a better preliminary education, certainly have studied the subject, but the majority of these have again forgotten it, and very few have a practical knowledge of it, and how many of these "very few" are at the same time masters in surgery? The answer is ready enough, not many.

While it is deplorable that colleges in provincial towns do not strive to give a better education, let us see what our best medical institutions have done. I am not aware that any college has ever appointed a professor of electricity, or that even elec-

trollysis has been taught anywhere. Within a few years, the subject has not been even mentioned; and only within the last two or three years about two meager courses of lectures have been given in electricity. It is also a curious fact that the *only* professor of surgical electricity could be found at the Homœopathic College in New York.

From these facts, it is evident that the majority of our practitioners are incompetent to practice electrolysis in urethral stricture, and if they attempt it they must necessarily fail. There are even professors of surgery, masters of the art, who confess that they know nothing of electricity. Now, it may be said that these statements are exaggerated, and my deductions untrustworthy. My answer is, I have the daily proofs in my correspondence. Let me refer to one.

ROBERT NEWMAN, M. D.

DEAR DOCTOR: Will you have the kindness to inform me how many cells I should use in an 18-cells Kidder's battery for curing stricture in the wall of urethra by electrolysis, and how to apply the bougies, etc., and oblige yours, * * *

MY DEAR DOCTOR: How many cells of the battery do you generally use, and what size of a bougie, etc.? Yours, —

One correspondent desires to know if the gravity battery is not best, and if he can use as electrode a *rubber* catheter; one insists on using an electric machine to turn with a crank, and, as his two hands are in consequence engaged, thinks one pole in the urethra is sufficient, asking of what use is the positive pole, if the negative does the work. Another would-be operator reports that he has used so strong a current that "the patient screamed with pain," and that then he did not succeed in the end. Communications of this sort, ridiculous in the extreme, I receive constantly, and they best prove the ignorance of otherwise good practitioners in excellent standing. Thus we see the first cause of failure: incompetence of the operator. There are many men who are capable of achieving success, having a sufficient knowledge of the subject, but they fail because they are

careless of the details, are impatient and easily discouraged. I may illustrate by a case, which was reported to me by a college professor in excellent standing. First, I shall give a copy of his notes, marking with numbers, whenever the case is managed badly, or against the rules, as laid down in my articles. The criticism will follow the corresponding numbers in regular order.

I. DR. A.'S CASE.

June, 1885.

ROBERT NEWMAN, ESQ., M. D.

MY DEAR DOCTOR: September, 1882, you kindly wrote me in reply to some questions —. . . I did not attempt to treat urethral strictures by electrolysis until April of this year. The case was one of five years' standing, and which, in addition, I had on two separate occasions treated by the method of introducing catheters. Recontraction ensued after each treatment.

April 10, 1885.—Assisted by Dr. B., who loaned me his modification of the battery (1), and worked it for me, I passed a No. 9 (English) electrode through the stricture. But the patient was unable to bear the pain (2) even when six or seven cells were used. Ether was administered, and the operation (3) completed, when eleven cells were in operation (4). I then passed a No. 9 steel sound into the bladder (5).

April 12th.—I passed a No. 8 English sound, which made the stricture bleed (6).

April 13th.—The patient complained of chills and fever, for which I ordered quinia. N.B. This was an attack of urethral fever. It passed away in a few days.

May 12th.—While absent from the city, the patient had an attack of retention, which required the service of a physician, who introduced a catheter.

May 22d.—I passed a No. 8 sound, but much to the patient's surprise the stricture bled (7).

May 23d.—Electrolysis with ether as before. A No. 10 electrode was used, and only after the steady use of 12 cells for a considerable time did it pass into the bladder. On recovering from the ether the patient passed water in a full stream.

May 28th.—I passed a No. 10 English catheter, and drew off

about eight ounces of urine. The catheter became blocked with a clot. He had a chill. Quinine ordered.

May 29th.—The patient is better, but he still experiences some pain in the prostatic region during micturition. The patient and I are both satisfied that as much has been accomplished in these two *séances* as had been done during a week or ten days of the ordinary treatment. Yours, etc., A.

Comments on this Case.—1. If the doctor borrowed a battery, it appears that he was not an expert in electricity; therefore, at the very outset, the best management of this operation can not reasonably be expected.

2. Pain should not be caused during the operation, and can not occur with mild currents. If soreness be present, it must be allayed first by suitable treatment.

3. I never give anæsthetics during the operation, because I use weak currents. I have laid much stress on this point. I desire the patient to be conscious, so that he can tell me his sensation, in order that I may be able to graduate the strength of the current accordingly.

4. Eleven cells may be used, but as a rule they furnish a rather strong dose of electricity, particularly when the elements are large, and the fluids concentrated, thereby producing larger quantity and greater intensity. While under certain circumstances the current of eleven cells may be demanded, I only wish to call attention to the fact that sometimes it may give too much electricity.

5. The unexceptionable rule is, never use two electrodes during one *séance*, and still more important is it that after the operation no instrument should be introduced, for several days at least, as it will always irritate, and often do serious damage. In this case, I can not understand why the sound No. 9 was passed when the same size electrode had just entered and had been removed. Very bad practice!

6. Still worse was it to pass any instrument too soon, and the hæmorrhage following showed the damage done. Besides, why select a No. 8 when a No. 9 had passed two days before? The object was to enlarge the caliber of the urethra. This treat-

ment also set up urethral fever, which may be avoided by proper care.

7. The proper procedure should have been to allay the irritation, and cure the cause of the bleeding, and then repeat the electrolysis. I can not see what good the sound can do when it only causes hæmorrhage and irritation. The analysis of this case illustrates many points of bad management, and is therefore instructive. Through reports and observations I have learned of more cases which were mismanaged, and, strange to say, often patients were cured in spite of the mismanagement. Frequent causes of non-success are the treatment with too strong cauterizing currents, and too frequent *séances*, while my rule is weak currents and long intervals between *séances*. Another mistake is to operate on a painful or too sensitive urethra while in a state of acute inflammation.

There are more causes of failure, but those cited above will suffice to prove that the operator is responsible for them either through incompetency or through bad management. A small percentage of the disappointments, however, may be due to the imprudence of the patient. This I shall not discuss.

II. *Mistaken Diagnosis*.—If the patient have no stricture, and he be treated by electrolysis for that disease, it is evident that a failure is the consequence, and some physicians will report such as failures of electrolysis. That such a charge is unfair is obvious. I shall relate only a few instances of false diagnosis. The spasm of the bladder in cystitis, as well as the encroachment on the caliber of an enlarged or inflamed prostate, may be mistaken for a true stricture. In such cases the passage of an electrode will cause more contraction, create pain, and, the greater the force used, the more will the caliber of the urethra contract, and the instrument be made to push through a wall as through an enlarged prostate. The galvanism under such circumstances causes a contraction by bringing on a spasmodic action of the urethra and bladder, while the faradic current only allays spasm. In simple acute prostatitis, galvanism may cause more inflammation, a hæmorrhage, and finally a more or less severe prostaticorrhœa. Certain tumors, neoplasms or calculi

may constitute impediments, and be mistaken for strictures; as also chancroidal and syphilitic conditions.

The causes of failure I have learned from experience. I have referred to them in my earlier articles, and have seen them in the practice of friends. A gentleman in whose skill I could place the utmost confidence, who has operated with me, and who for several years has been successful in the treatment of strictures of the urethra by electrolysis, told me that he had failed in several cases where the strictures were situated near the meatus. He had no difficulty in passing the electrode in the usual way, but at the subsequent trial he found the caliber smaller, and the walls more indurated, which state was in striking contrast to his former results. As I did not see his cases I could not give any advice, but soon solved the mystery by seeing one case under my own care, which in brief was as follows:

CASE OF SYPHILITIC STRICTURE.—The patient came from his plantation in the South, entirely broken down, to be treated for stricture. Three strictures were found at one, three and a half, and six and a half inches respectively from the meatus. During June, 1885, his condition and general health were improved. While electrolysis materially bettered the two deeper strictures, the first one would not improve in the same ratio; on the contrary, it spread more toward the meatus.

July 11th.—The stricture close to the meatus is very hard, firmly adhering; but electrolysis succeeded beyond expectation, and an electrode, No. 25 French, passed readily, working out the stricture with a current of six cells for fifteen minutes.

August 1st.—On his return, the stricture was worse, scarcely admitting a No. 18 electrode. The mucous lining was healthy, but the hardness in the submucous tissues had extended, making a callous surrounding. Then it was that I diagnosed a syphilitic stricture, which I treated locally, at the same time putting the patient on a mixed constitutional treatment. The result was surprising, but it did not cure the stricture; it merely changed the callous appearance and made it amenable to the electrolytic treatment. After two sittings I cured the strictures so that a No. 26 easily passed.

September 20th.—The patient reports himself well. Re-examination on September 27th proved the complete success of treatment.

Now, I could understand the former failures of my friend, particularly when I considered that his patients had been transferred to him from the venereal class of a hospital. In my case just related were three *bona fide* strictures, but the first one was mixed with altered tissues, the results of syphilis, and therefore needed for a cure the constitutional treatment just as much as the electrolytic; neither of which alone would have effected a cure. This case has been used for an illustration, but is not an isolated one. I have several more in my notes, but in these the syphilitic taint was known, and mixed treatment was given from the beginning.

III. *Faulty instruments* may certainly be a cause of failure, but not an insurmountable one, for an expert operator is able to overcome this impediment, in part, by skillful manipulation. Nevertheless, every surgeon, in this as in every case, is free to select the most suitable instruments for his purpose. I can not lay down any inflexible law.

We need, then, for our operation a good galvanic (constant current) battery, with conducting wires, sponge electrode, conducting screws, bougies *à boule*, and a full set, or, better yet, different sets of electrode bougies. The bougies must have the proper curve, they should be smooth and finely polished, well insulated except at the bulb, which, in its turn, must have the proper size and shape. We likewise need to complete our *armamentarium* a set of tunneled electrodes to run on a guide, and a few auxiliary instruments. The electrodes may be curved or straight, the bulb acorn or egg-shaped. For my own part, I prefer bougies with short curves, and the tunneled electrodes with still shorter ones.

These tunneled electrodes, by the way, are not sounds. They have been made by the firm of George Tiemann & Co., 67 Chatham Street, New York, in accordance with the principles laid down by my fellow-townsmen Professor John W. S. Gouley. I may say in passing that they have yielded me great aid in

very severe cases, and that, if used aright, it is impossible for them to make false passages. The case here shown contains a full set of electrolytic instruments.¹

Above I have merely touched upon some errors of operators, now I have not time to enumerate all the varieties of mismanagement with battery, fluid, and instruments. All I need to say is that any deviation from the right course of selection and management will be a cause for regret.

The question how many cells should be used for this procedure is just about as answerable as What is the dose of morphine? or What is good for a headache? The operator, guided by his own judgment, must select the strength of the current, and even then he must graduate it according to the exigences, and be prepared to do so at any moment. It would be, I am sure, very desirable to express the amount of electricity in positive quantities, but at present we can not do it for want of a uniform system in measuring, and particularly in registering. The galvanometers in use are not trustworthy, and are besides very impracticable. I have no doubt that a system of measuring will be established before long, and that registering instruments will be soon devised, but these will be only useful in proportion to their adoption throughout the world. While I advise weak currents of about six cells, this measure does not express a fixed quantity, and at best is only relatively correct. I approach a general statement only when I say that the amount of electricity to be used depends partly on the work to be done, and partly on the nature of the stricture. In the practical application other facts must be considered, such as the state of the atmosphere, which carries off the electricity and modifies the resistance by its humidity. In clear, dry weather, six cells will do as much as ten in a rain-storm or during a fog; and a patient may not endure so much to-day as he bore the day before. Even if we had such a universal system of measuring electrical currents, the exact dose necessary for the occasion must always be determined by

¹ For the description of the instruments and the *modus operandi* of the operation, I refer to my former articles, particularly in the "Medical Record" of August, 12 and 19, 1882, and the "New York Medical Journal," January 3, 1885.

the operator; just as the physician prescribes according to the requirements of his individual patient. I do not pretend to note all the causes of failure, for many, doubtless, have not yet come to my knowledge, but I think that I may close my list with those which have been already pointed out.

To judge from the various causes of mismanagement, many failures of the operation might be expected; but not so, as failures are the exception and successes the rule. As germane to my subject I can not refrain from a quotation or two. Dr. Dunn Cooper, in a recent article in the "*Medical Advance*," strikingly and tersely says: "The treatment of organic stricture of the urethra by electrolysis is the most rational of all known methods, being the safest, most rapid, causing the least pain, and giving the most satisfactory and lasting results. The question, why all operators are not successful, is best answered, that work not properly done never gives satisfaction. To be successful one must be an expert, not only in the use of electricity, but also in the selection and manipulation of urethral instruments," etc. The late Dr. J. Butler thus reflects my views: "The time is not far distant when electrolysis, skillfully and scientifically used, will be the universally acknowledged remedy for stricture of the urethra, and in the coming text-books on surgery it will be shown to far surpass the old mechanical means for restoring the permeability of the urethral canal, and the old methods of divulsion, forcible dilatation, etc., will, by-and-by, hold the same relation to urethral surgery that heathen mythology does to the religion of to-day—taught in our schools only as matters of historical interest, belonging to the literature of a by-gone age."

These quotations come from experts in electricity, and, considering its progress in all directions of late, it can not be too often repeated that the expert must and will succeed. Even many good surgeons report successes, who had no former experience, and were only induced to try the experiment after having read my articles on the subject. Among many cases reported to me privately, I will cite here only one, which speaks for itself. The copy of the letter is as follows:

Rockaway, New Jersey, July 27, 1885.

DR. ROBERT NEWMAN.

DEAR DOCTOR: Last spring I received a pamphlet citing severe cases of stricture of the urethra treated by you in accordance with the new method of electrolysis. I read it with great pleasure, and made up my mind to try it on the first patient presenting himself to me with that trouble. I did not have to wait long, for in a few days I was consulted by a gentleman who was suffering from chills and fever. I found by questioning him that he had, on the day of his visit to me, been for the ninth time to Professor ——'s office for treatment of a stricture. He said the doctor had failed to pass a sound through it, as well as to engage even the smallest whalebone filiform instrument, and had that day given up his case in disgust. In this state of mind, I spoke to him of the success you had with your method. I proposed a trial, to which he consented. On examination, I found three strictures, located deep in the urethra, two thirds the distance to the bladder. The first *séance* lasted twenty minutes. I used a No. 8 acorn-shaped bougie. I did not succeed in engaging it. One week later, with the same sound, the *séance* lasting twenty minutes, I had no better result. Two weeks later, at the third *séance*, I used a straight-end No. 8 instead of the acorn-shaped one. In thirty-one minutes it passed through a cork-screw stricture one inch and three eighths in length. At the next *séance*, ten days afterward, I passed readily a No. 12 bulb, acorn-shaped. He has been to me four times since it first passed, and I can at present scarcely feel any of the strictures in passing the sound through them. Now, I should like to know the permanence of the result from your experience.

I wish to state here, that since the stricture was passed he has had no chill or fever, but has rapidly regained his normal weight, one hundred and sixty-five pounds, and feels as well as ever he did in his life. He was about to give up his position on account of his difficulty, but he has now abandoned any such intention. I consider electrolysis one of the greatest additions to this branch of surgery made known for years, and you deserve the thanks of the profession for bringing it before them. Very truly yours,

F. F. SANDERS.

The management of this case is in striking contrast to the one criticised in the beginning of this paper. I am not per-

sonally acquainted with the successful operator, but congratulate him heartily upon his skill and good sense. We have here a surgeon, practicing in a small place in the country, with no other guidance in electrolysis than my reports on the subject, able to cure one of the worst strictures, which baffled the skill of a celebrated professor. There are many other good men, who, as general practitioners, have excelled and succeeded with the operation under consideration, like Prince, of Jacksonville, Florida; Glass, of Utica, New York; Frank, formerly of Titusville, Pennsylvania; and many others.

It has been up-hill work to introduce the method of electrolysis in urethral strictures, but now it has been well established, and is spreading all over the world. It *must* succeed in the hands of the practitioner who is master in handling genito-urinary instruments and electricity. The operation itself needs care, a clear head, a steady hand, and fingers which both see and feel, conjoined with patience and good management of the case. In the strictest sense there can be no failures, as electrolysis is a chemical action, fixed by natural laws.

DISCUSSION.

DR. THOMAS H. MANLEY, of New York County.—When a paper which is largely original in method of treatment, and bears the mark of great study, is presented, we should discuss it. I can sympathize with Dr. Newman, if he feels as I did a year ago, when I offered a contribution of interest, as I thought, and hoped to get some opinions from the gentlemen present, when lo! there was no discussion. I presume that our friend desires to hear the adverse as well as the favorable opinions of the members present. Now, as to this new line of treatment, there is one thing which is necessary to prove before it is generally adopted; that is, that it possesses an advantage over the methods which, in the hands of not only skillful gentlemen, but of ordinary practitioners, have been successful. It seems to me that there are some almost insuper-

able objections. Dr. Newman says that, to begin with, one must be a skilled manipulator of the urethral organs; along with that he must be familiar with the action and use of electricity, which is a very difficult accomplishment. I think it is safe to say there is not one general practitioner in fifty familiar with the use of electricity. Why, it is a life study!

I think that those who have treated stricture will find that there are hardly any cases which will resist treatment by the old method of gradual dilatation, provided the physician has patience and experience. Sometimes you will have the fortune to meet a case where your brother physician has failed, and then your patient goes to another, and that other doctor succeeds in passing an instrument of a certain scale. You may recall the fact, gentlemen, that Symes lays down the axiom that no stricture is impermeable, or, at least, it is very rare; and, besides that, any stricture which admitted of the passage of the smallest instrument was curable. With regard to the special advantages which this electrolytic method possesses, of course those familiar with its application are cognizant, but with the general practitioner, beyond whose reach it is, it seems to me questionable. May it not be a dangerous experiment without a thorough preliminary training under the eye of the originator of this form of treatment? So that I think that as long as we are familiar with the treatment of gradual dilatation, by revulsion and division, we should adhere to the old plan until it is demonstrated that we can safely and generally substitute another. Until the rank and file, as well as the country practitioner, with all the urgent demands upon their time, are well up to the standard of requisite skill, we had better not come to a hasty indorsement. These are objections which are insurmountable, and I am of the opinion that we really require some mode of procedure that can be intrusted to all.

DR. G. C. H. MEIER, of New York County.—It is with some trepidation that I rise to say a few words in favor of a plan of treatment that it took over fifteen years to thrust upon the notice of the profession, and upon whose merits, even to-day, our most eminent specialists in diseases of the urinary organs maintain, if not a bold opposition, at least an obstinate silence. I am somewhat encouraged, however, by the knowledge that the younger part of the profession are gradually testing for themselves the value of the

operation under consideration. We gradually hear, year by year, a little more of the electric treatment of strictures of the urethra, and the number of successfully treated cases is gradually growing, so that one may say with perfect security that the operation has at this time a legitimate place in surgery.

It has been my privilege for over four years to be the assistant of the author of the paper just read, both in his private and dispensary practice. I speak from what "the eye has seen" over and over again, of the marvelous power of the electric current, in the trained hands of my esteemed friend, over most persistent urethral strictures. Urged by him, I undertook a number of cases and began treating them by the plan he advocates, and which I had seen him adopt with so much facility. Note the result. My first cases were miserable failures. What looked to me so easy of accomplishment—simply the attaching of the proper electrode, passing it down the urethra to the stricture, and then letting the current do the work—was not the treatment of stricture by electrolysis. What my friend the doctor had been training himself to do for over twenty years was not to be learned by a novice in a few weeks. I disgustedly told him that I had enough of electrolysis, having lost two good patients by my mismanagement. Dr. Newman, however, urged me to try another case, and, if I did not succeed, to bring the patient to his office, and he would endeavor to find out wherein the fault lay. I did so; the next patient that came along was put to the ordeal. The first sitting was followed by painful micturition for a few days, though a very light current had been used; at the next sitting a larger instrument was used, which passed in, though with a little trouble; there was again some painful urination, and on the third sitting I was unable to pass the instrument I had first introduced. I took my patient to the doctor, who, by endoscopic examination, diagnosed a granular condition of the urethra near the stricture—the cause of my failure! After proper applications to this diseased portion, the treatment of the stricture by the battery was perfectly successful.

I believe that there is a common impression that the electricity in these cases should supersede all accessory means of treatment. This is by no means the teaching of the author of the paper. Now, the truth is that the discharge often stops under this treat-

ment, although not invariably, and in many cases local treatment must do the rest. It will remain permanently absent only when the stricture has been removed by the electric action of the current.

Strictures just at the meatus I have found to be the most difficult ones to treat by this process. A great majority of these seem to be the sequelæ of former chancroids or chancres. In both these conditions mixed treatment, as you have heard, seemed to exercise a beneficent effect on the parts, and allow the current to start the work of absorption. But I have also noticed that a much greater majority of persistent chronic discharge from the urethra is due to an abnormally small urethral orifice (contracted meatus, I believe it is erroneously called), and this, I think, is usually classed under stricture of the urethra, though there is no adventitious tissue present. In these cases the discharge simply has its nidus in the fossa navicularis, rendered abnormally deep by the small meatus. Here you will undoubtedly fail to accomplish anything by electrolysis; the reason is obvious: there is no abnormal tissue to absorb, and healthy tissue is not acted on by this mild current. The knife here is the swiftest method of cure.

In closing I would urge all of the gentlemen present, who are interested in this part of surgery, to give to the claims and proofs brought forward in support of the curative power of the electric current in the cases under consideration—mark you, when used by competent hands—their unbiased consideration before endorsing an opinion regarding its inefficiency, which opinion, if it comes from a man eminent in his profession, and looked up to by the younger members, has an influence retarding its application. All that the author of the paper asks for is a fair trial and an unbiased judgment. Prejudice may defer the final triumph, but can not defeat the underlying principle.

REMARKS UPON SUBPERITONEAL PERI-UTERINE HÆMATOMA.

By GEORGE T. HARRISON, M. D., of New York County.

Read November 20, 1885.

A GLANCE at the literature of the subject will show that, to French observers is due the merit of having first called attention to the comparative frequency of blood effusions in the female pelvis, under conditions not associated with parturition or the puerperal state. In 1850, Nélaton¹ described retro-uterine hæmatocele in such graphic terms, and gave to the affection such prominence that, as Dr. Priestley² remarks, "it henceforth takes a permanent place in nosology." The various writers who made contributions to this theme after Nélaton were in full accord in regard to the symptomatology, but as to the exact anatomical seat of the blood-tumor antagonistic views obtained. Nélaton considered it as always intra-peritoneal. "M. Viguès, the first of the pupils of Nélaton to write a monograph upon this subject," says Vaisin,³ "considered these tumors as being exclusively extra-peritoneal." Vaisin⁴ himself was of the decided conviction that the seat of retro-uterine hæmatocele was always and exclusively intra-peritoneal. Sir James Y. Simpson⁵ regarded the site of blood-tumor as extra-peritoneal, the blood being poured into the cellular tissue of the broad ligament and

¹ *Vide* "L'Hématocèle," par A. Vaisin. Paris, I. B. Baillière et Fils, 1860, p. 15.

² Reynolds's "System of Medicine." Henry C. Lea's Son & Co., Philadelphia, 1880, p. 818.

³ *Loc. cit.*, p. 27.

⁴ *Loc. cit.*, p. 28.

⁵ "Clinical Lectures on Diseases of Women," by Sir J. Y. Simpson. D. Appleton & Co., 1877, p. 126.

adjacent pelvic cellular tissue. Occasionally only does it occur, according to his views, that the blood accumulates within the pelvic portion of the peritoneum. On the contrary, Dr. West declares that he does not know of any post-mortem examination, made with due care, in which the seat of the effusion has been clearly proved to be extra-peritoneal.

Those who denied the existence of the extra-peritoneal site had strong support for their views, when they cited so great an authority as Virchow,¹ who in 1863 declared: "A primary extra-peritoneal hæmatoma formation I have never seen in a corpse, omitting puerperal and traumatic cases." In 1866, Schroeder,² after subjecting to rigid analysis all the cases in which post-mortem examinations had been made, and which had been cited to prove the existence of extra-peritoneal forms of hæmatocele, came to the following conclusion: "Although, from the standpoint of pathological anatomy, the occurrence of an extra-peritoneal hæmorrhage can not be contested, in fact is put beyond doubt by the blood effusions taking place during birth and the puerperal state, yet this inference is deducible from it (that is, from the analysis of the cases above mentioned), that extra-peritoneal blood effusions, which give rise to clinical symptoms, independently of the time of reproduction, are uncommonly rare and that a quite certainly proved case does not exist in the entire literature up to the present moment." In 1874 the theme was enriched by an excellent monograph from the pen of Dr. I. Kuhn, who enjoyed unusual opportunities for the study of this lesion under Professor Frankenhäuser's instruction. The value of this work is especially enhanced by the rich clinical experience of Professor Frankenhäuser, and freely has the author availed himself of this ample source of supply. Kuhn reports two cases very fully, in each of which an autopsy was made, and the question of the existence of a hæmatoma peri-uterinum subperitoneale was placed thereby beyond peradven-

¹ "Die krankhaften Geschwülste," von R. Virchow. Berlin, 1863, Verlag von August Hirschfeld, p. 151.

² "Kritische Untersuchungen ueber die Diagnose der Haematocele retro-uterina," etc., von Dr. K. Schroeder. Bonn, 1866, p. 40.

ture. In one of these cases the diagnosis was positively made before death. A most interesting case of this affection, which terminated fatally, is given by Dr. Emmet.¹ The hæmorrhage was into the right broad ligament, but extended to the front of the uterus. In consequence of the rupture of the investing membrane of the tumor, blood was poured into the peritoneal cavity with a rapidly lethal result. Ante-uterine hæmatoma had been clinically diagnosticated before, but this case is unique in this, that the demonstration of the existence of a peri-uterine hæmatoma in this situation was for the first time made after death. Dr. A. Martin,² of Berlin, has written a most instructive paper relative to this subject, and has given important data obtained by inspection of the tumor, in each of four cases respectively, after laparotomy, in which that operation was performed in order to carry out his therapeutical views. Dr. Düaelius³ furnishes the accurate history of four other cases in which Dr. Martin operated by laparotomy, and in which consequently the seat of the tumor and its relations could be accurately determined. The name hæmatoma peri-uterinum, which Dr. Kuhn proposes for these effusions of blood into the ligamenta lata and neighboring parts of the pelvic floor, should be universally adopted, and confusion with retro-uterine hæmatocele be sedulously avoided. Most of the text-books treat of peri-uterine hæmatoma, under the term pelvic or retro-uterine hæmatocele, as a variety of the latter affection, using hæmatoma as synonymous with hæmatocele. As peri-uterine hæmatoma has a definite group of clinical symptoms peculiar to it, scientific accuracy would seem to demand that it should have a separate and distinct place in nosology. Let me here give an illustrative case to call to mind the clinical picture which this lesion evokes.

In the latter part of the winter of 1880, I was consulted by Mrs. B., aged 30, in regard to a train of symptoms which pointed

¹ Emmet's "Principles and Practice of Gynæcology," 3d edition. Henry C. Lea's Son & Co., Philadelphia, 1884, p. 233.

² *Vide* "Zeitschrift für Geburtshülfe und Gynaekologie," viii. Band, 2. Heft, p. 476.

³ "Archiv für Gynaekologie," xxiii. Band, 1. Heft, p. 107.

to uterine disease. Her history was, in brief terms, the following : She had been married fourteen years ; she first menstruated at the age of thirteen, but the period did not recur until she was sixteen years old, at which age she married. She menstruated only once before marriage. Menstruation, which has always been scanty, is attended with severe pain. For the past two years it has recurred at irregular intervals ; at times three or four months elapsed with no sign of a recurrence of the period, so that she thought she had reached the menopause, as there were no indications of pregnancy. She has suffered more or less for ten years from constipation, complains also of headache. The second of her two children was born four years ago. She was very ill after the birth of this child, she states, with an attack of puerperal fever. She had had one other child previously ; has had no miscarriages. In consequence of misfortune which overtook her husband, she has had to work a great deal with the sewing-machine for the past two or three years.

Status Praesens.—The patient is a strongly built but anæmic looking woman, and bears on her countenance the stamp of ill health. Examination *per vaginam* revealed the existence of an enlarged uterus, the portio vaginalis being the seat of an extensive laceration on the right side. On the 14th of March, 1880, I performed Emmet's operation of trachelorrhaphy. On the fourth day, subsequent to the operation, she was seized suddenly with an intense attack of pain in the right inguinal region, accompanied by a sensation of extreme faintness ; there was an urgent desire to empty the bladder and a terrible pressure in the rectum. When I saw the patient after the invasion of these distressing symptoms I was struck by the signs she exhibited of acute anæmia. She described the pains as coming on in paroxysms, being very intense, and of a tearing, labor-like character. She felt as if something in her body was being rent asunder. I well recollect the impression made upon me at the time by the graphic, realistic way in which she depicted her sufferings, and how she struggled for language to appropriately describe the frightful agonies she endured. The pulse was frequent and small, but to my astonishment there was no elevation of temperature. Examination *per vaginam* showed the existence of a tumor as large as the fist occupying the right broad ligament, displacing the uterus to the left, the portio being

very much and the body but little dislocated. The pouch of Douglass was empty. The tumor was moderately hard to the sense of touch and presented an uneven surface below. There was no tympanitic distention of the abdomen, and there were no peritonitic phenomena. In view of these symptoms I thought I was justified in making the diagnosis of hæmatoma peri-uterinum subperitoneale. The origin of the effusion was probably the increased fullness of the blood-vessels in the uterus and broad ligaments, consequent upon the inflammatory reaction which the operative procedure evoked. Under the expectant plan of treatment the blood was gradually absorbed and the patient made a good recovery.

Since it is impossible in the limited time at my command to study the theme in all its aspects, I must restrict my remarks to such salient points in ætiology, symptomatology, differential diagnosis, and treatment, as I deem most important, making use of the articles referred to above of Kuhn and Martin to supplement my own clinical observations. Blood effusions into the ligamenta lata and vicinity in non-puerperal women occur always suddenly, as in the case just narrated. All hitherto published cases attest this fact. There may not be an extensive extravasation at the very onset, but one recrudescence after another may fill up gradually the entire disposable space between the layers of the broad ligament or ligaments and the pelvic floor, nay, even strip off the serous investment of the uterus to a greater or less degree. The rupture of a blood-vessel, which causes the effusion, usually takes place at the time of menstruation. In the case just described the blood effusion had no relation to menstruation, and in that regard was exceptional. A few cases have been reported in which the subjects had passed the menopause.

Hæmatoma is generally found to occur in women who have previously given birth to a number of children. As a rule, there is a causative relation between the action of a trauma on the genital organs at the time of menstruation and the origin of the hæmatoma. Observations hitherto published would seem to show that hæmatomata are found in the vast majority of instances among the poorer class who have to perform severe

manual labor. In regard to the frequency of hæmatoma, it is difficult with the data we at present possess to form an opinion approximating, with probability, to accuracy. Smaller effusions are, I believe, from my observation, frequently undetected, and in the case of more extensive ones an exact diagnosis is exceptionally made.

Let us now analyze the symptoms which characterize this lesion. The first peculiarity to attract our attention is the suddenness of its inroads. The woman affected after severe bodily exertion, after a fall, or other trauma, or without any apparent cause, is suddenly attacked by a pain of such intensity in the lower part of the abdomen that she drops down in a fainting condition, and must be carried to her bed, or else is only able to maintain herself on her feet with the utmost effort. This pain is not like a peritonitic pain, and is not disseminated over the whole of the abdomen, but is described by the sufferer as a tearing, splitting pain, or like a frightful spasm, or like the pains of labor—frequently limited to a circumscribed seat. The pains persist for a time, then abate, to return with the same violence after a pause. According to Kuhn, "Professor Frankenhäuser considers these horrible, labor-like pains as one of the characteristic symptoms of hæmatoma peri-uterinum." The patient has the feeling as if something in her body were being rent asunder. If the effusion of blood is small in quantity, these pains, as can be readily understood, are less intense and abate more quickly. A very important symptom is the *sudden anæmia* which appears, and which may assume the form of a profound collapse. This anæmia manifests itself in the pallor of the skin, the coldness of the extremities, the frequent and small pulse. At times there is an urgent desire to empty the bladder, and, notwithstanding, the patient finds it impossible to urinate, and must be catheterized. There is a constant pressure in the rectum. After the attack proper is over, this is one of the most annoying symptoms of which the patient complains.

As a rule the development of the hæmatoma has as an associate phenomenon a profuse discharge of blood *per vaginam*, the already existing menstruation becoming a menorrhagia, or, if the

menstruation has just ceased, its recurrence being thus denoted. There is no rise of temperature. In one case, however, that came under my observation, a complicating pleuritis caused a slight elevation of the temperature.

Examination *per vaginam*, and especially the employment of bimanual palpation, shows that the uterus is displaced from its normal position. If the effusion be limited to one broad ligament the uterus will be found displaced toward the opposite side, at times appearing as if it were bent around the tumor. The consistence of the tumor is at first soft, doughy, and at times fluctuating, or it may be hard from the beginning.

In some cases effusions take place simultaneously in both broad ligaments. In this event we find the pelvic floor depressed, the uterus generally being forced forward against the symphysis pubis. Behind the cervix uteri is felt a more or less solid bridge connecting the tumors on either side. In other cases the connecting link between the tumors passes in front of the cervix, or it may pass both in front and behind.

The differential diagnosis, when the symptoms are such as to point to an effusion of blood within the pelvis, must, in the first instance, establish the fact whether the tumor is situated within or without the peritoneal cavity; in other words, the differential diagnosis between hæmatoma and hæmatocele must be made. The first criterion which Frankenhäuser suggests as sometimes available in a recent case of hæmatocele is, in my opinion, not reliable, and, in fact, rests on a false assumption—this is, the disappearance of the effusion of blood from the pouch of Douglas as soon as the patient is made to assume the knee-chest position. Frankenhäuser states that he elicited this phenomenon in several cases of hæmatocele to which he was called, at the beginning of the disease. As hæmatocele is an effusion of blood into Douglas's *cul-de-sac*, the latter having been previously bridged over by pseudo membranes, and can not originate unless this cavity has been shut off from the general abdominal cavity beforehand, it is obvious that such an escape of blood can not be evoked by a change of position on the part of the patient.

A hæmatocele feels from the vagina like a rounded tumor, somewhat like a kidney; it is smooth in its contour, because bounded by the peritonæum. Its seat is always in Douglas's pouch, an acute uterine hæmatocele being possible in only a few exceptional circumstances. A hæmatoma, on the contrary, is not smoothly bounded on the lower part; it is uneven and nodular because the blood is effused into the loose mesh-work of the connective tissue. Through the abdominal walls it has the feel of a smooth, well-defined tumor, because its upper boundary is formed by the lifted up peritonæum. It is in the beginning of a doughy consistence generally, and exhibits later on irregular degrees of hardness; the blood retains its fluid condition much longer than in the case of hæmatocele. Less importance is to be now attached to the circumstance whether the uterus is higher or lower in the pelvis than was formerly the case, as it has no bearing on the differential diagnosis. It is important, however, to observe that in hæmatocele the uterus is always crowded forward against the symphysis pubis, the fundus deviating most from its normal position, while the cervical part is more or less fixed by the sacro-uterine ligaments. In hæmatoma the uterus is displaced toward the opposite side, if the effusion of blood amounts to any considerable quantity. The portio vaginalis is most displaced, the uterine body least. The uterus does not lose its mobility, as in hæmatocele, but retains it to a limited degree.

If a tumor originate suddenly on one side of the uterus and projects by a bridge over to the other side, it is safe to assume that we have before us a hæmatoma. One of the characteristic symptoms of hæmatoma is the union of two lateral tumors by a bridge before or behind the uterus, the tumors being on a higher level. A hæmatocele is accompanied by pains from the beginning, referable to the peritonitis. The abdomen is distended and painful. An elevation of temperature is usually observed. In hæmatoma there is no peritonitis, and no fever, as a rule. In contrast with exudations in the pelvis, hæmatoma is characterized by an absence of fever.

Parametritis is always of septic origin, and rarely begins

without a chill or feeling of chilliness, followed by a rise of temperature. When a case comes under observation at a late stage, a discrimination between parametritis and hæmatoma may be impossible. Perimetritis may be recognized by the peculiar fixation of the uterus, the course of the disease and its localization, and by the febrile symptoms attending it.

The differential diagnosis between hæmatoma on the one hand, and tubal tumors, subserous myomata, intra-ligamentary cysts of the ovaries or of the broad ligament on the other hand, may present very great difficulties. All these neoplasms are distinguished by the slowness of their development, and the gradual exacerbation of their phenomena in contrast with the suddenness and ætiology of the hæmatoma.

In by far the majority of cases of hæmatoma our therapeutical problem is an easy one; the plan of treatment is an expectant one. In a small percentage of cases where absorption does not take place, the general health depreciates, and more radical therapeutical measures are imperatively demanded. The blood sac must be emptied of its contents. One of two methods may be adopted. Zweifel,¹ in a very valuable article on the treatment of hæmatocele and hæmatoma, advocates the method of a free incision through the vaginal wall and then through the sac wall, the introduction of a permanent drainage-tube, and, finally, the thorough washing out of the cavity by an irrigator. The after-treatment consists in washing out the cavity with disinfecting fluid, at first every two hours; later, four to six times daily. Martin, on the other hand, maintains that this method is obnoxious to the following disadvantages: From the vagina it is impossible to free the wall of the cavity from the blood-coagula and shreds of tissue clinging to it, and, moreover, that there is great danger of secondary hæmorrhage, of laceration of the peritoneal investment, and of the formation of pus accumulations in the torn fissured spaces of the ligamentum latum. He therefore prefers the method of laparotomy. In this way, after removing the intestines out of the way, the blood-sac is freely exposed to view; it is then incised at the place that

¹ "Archiv für Gynaekologie," xxii. Band, 2. Heft, p 185.

seems most favorable, the cavity is cleaned, the walls are scraped, if any hæmorrhage appears it is at once controlled, provision, too, is made by drainage through the vagina for the discharge of further secretions of the wound, and, finally, the blood-sac is closed again above by suture. By this operative procedure Martin has obtained excellent results. The final decision of this question, however, must be left to more extended clinical experience.

A CASE OF CANCER OF THE KIDNEY.

By JOHN SHRADY, M. D., of New York County.

Read November 20, 1885.

THE following condensed notes are from the report of a specimen presented to the New York Pathological Society some four years ago :

The patient from whom the tumor was removed was a female child in her third year, of healthy parentage, without a history of cancer in either line, and in whom nothing abnormal was apparent until the mother noticed, along with certain febrile manifestations, a growing mass in the left hypochondriac region, which was attributed to a fall upon the carpet a month before. Dr. D. C. Cocks, the attending physician, very justly attached no importance to this as a cause. The tumor grew rapidly, and besides an encroachment upon the right side there was a marked line of dullness up to about the region of the eighth rib. Before death the umbilical measurement had increased from twenty-one to twenty-seven inches. The hypodermic syringe drew blood only, in which was detected, according to the report of Dr. William H. Draper, nothing unusual. The urine contained no albumen, casts, cells, or blood. The average temperature throughout the entire illness was only $100\frac{1}{2}^{\circ}$. Drs. Watts C. Livingston and John S. Aitkin were afterward associated in counsel with the family physician and myself, when also the fluid obtained with difficulty from the protuberant mass in very small quantity by one or two aspirations yielded results precisely as before. Narcosis in each instance of these exploratory tests was readily produced by chloroform.

At the autopsy the diaphragm was found pushed up to the fifth rib on the left and to the third rib on the right side. The apex of the heart was between the second and third ribs and its

base at the sterno-clavicular junction. The tumor, which was renal, was found to be adherent to the spleen, and had carried this organ high up into the diaphragmatic vault. The greater portions of the abdominal wall were agglutinated by friable adhesions. The right kidney, with the exception of a slight, perhaps scarcely appreciable hypertrophy, presented no abnormal appearance. The weight of this mass was eight and one half pounds. The microscopical appearances were : abundance of cells with free nuclei and very little intervening tissue. The presence of normal kidney structures determined the organ involved. The mass in gross was soft almost to pulpiness, even diffiuent in character.

Cancer of the kidney, though by no means infrequent, in conjunction with the manifestations of the disease in other organs, as a primary affection is comparatively rare. As a rule it occurs early, generally before the fifth year ; and although not always demonstrable is most probably congenital in its origin. Accepting the doctrine that cancer is, after all, only " cells which have gone astray " and which have attained their maximum development under new conditions, we may have an explanation of the phenomenon why the kidneys should be an early and preferred site. The same may in part be said of the parasitical theory, so far at least as a permeable and yielding structure may be concerned. Here heredity does not seem to come in as a factor at all, but rather the complicated nature of the organs themselves in a measure invites invasion.

As regards the morbid anatomy, it may be laid down as a rule that the encephaloid variety of cancer is the character of the adventitious mass to be found in the renal organ, although Robin, as quoted by Roberts, found in the kidney of a man a growth in part taking on the character of epithelioma. Authorities aver that the invasion begins in the cortical substances and afterward encroaches upon the pyramids. Wilks and Moxon, however, broach the opinion that the lymphatic glands outside the kidney are primarily attacked, and that the hilus is finally penetrated. This last view is probably correct.

But, as already stated, the encephaloid being by far the most

common condition to be encountered, I shall briefly allude to it only.

The diagnosis of cancer of the kidney is comparatively easy, although from its rarity many a practitioner is apt to be taken off his guard. The ovary in the female and the spleen in both sexes are apt at first to be suspected; and yet, in the infant, both organs, or rather classes of organs, as being of feeble activity, furnish no particular assignable reason for attack. Again the superior vigor of function, eliminative in character, should bring the kidney more especially under suspicion. In fact, the erroneous idea that carcinoma is more essentially a disease of advanced life leads a very respectable majority to exclude it entirely from the category of probabilities so far as infancy is concerned. The mortuary records of large metropolitan centers, however, tell a different tale.

The chief point of the diagnosis of these pre-adult cases, according to Roberts, is the position of the colon, patent even to the eye, as a broad band-like welt constricting the tumor and dividing it into two unequal parts. The colon when empty is, under such a circumstance, not quite so apparent; but an enema, by bulging out the gut, removes all likely sources of error. The rapidity of growth in these cases is somewhat astounding; even in a few days, tape measurement, with the umbilicus as a fixed point, may show an increase in circumference of two or three inches. The weight of the whole body likewise becomes noticeably augmented, which is not to be wondered at since the constitution of the tumor is generally semi-fluid, with an accommodating investment. The tumor also lifts up the organs in its way, distorting and encroaching upon them everywhere. Thus the right kidney may be displaced to the left, and sometimes be crowded to the costo-abdominal wall; the left kidney may push the stomach to the right and carry the spleen high up against the readily retreating structures above. This was demonstrated in the case just recited. The diameters of the infantile pelvis being small, the direction of the growth must needs be toward the thoracic viscera, and so the heart becomes embarrassed, the lungs compressed, and the steadily increasing dyspnoea wears

out the little sufferer's life, but by most painfully slow degrees. This last symptom, dyspnœa, is prominent during the later stages of the morbid development. Again, as should have been mentioned before, only one kidney is usually affected, but, if both, the companion organ becomes so secondarily.

Hæmaturia is held to partake of the nature of a pathognomonic symptom, but in the three cases in our experience, two of which passed into other hands, there was no trace of blood whatever in the urine. All of these instances, I desire to impress upon your minds, were met with in children who had not attained the fifth year. When present, it is probably confirmatory, or perhaps writers have sometimes found merely what they wished.¹

Tumor in the abdomen, as before intimated, is also a distinctive symptom, and this is generally first discovered by the mother in the course of the daily ablutions of the child. This tumor generally begins in the loins, between the lower ribs and the crest of the ilium, growing upward and then downward and forward.

Another evidence of trouble, if I may be allowed to put forth what I disclaim as being an original view, consists in the prominent and somewhat varicose condition of the superficial abdominal veins. This fact is mentioned by writers, but only in an incidental way, without any apparent intention to give it prominence. Anasarca and ascites may be common, or, to speak more correctly, not infrequent, in consequence of pressure upon the vena cava, but the conspicuousness of the abdominal veins, tortuous and enlarged, indicates an arterial supply exceedingly active and voluminous in character; and this venous prominence stands out in bold relief upon the emaciated abdominal surface of the wan and pitiable sufferer.

For the sake of completeness, we may barely allude to the fact that there may be a suspected fever of a remittent type, but the temperature is only slightly supernormal, and is more

¹ "The absence of hæmaturia," says Roberts, "seems to depend generally on the occlusion of the ureter, either by the pressure of the tumor, or the extension of the disease into it." "Urinary and Renal Diseases," Philadelphia, 1872, p. 523.

likely to prove a riddle than an aid in interpreting the phenomenon.

Then again, the general cachexia, or, to be more correct, the intrinsic progressive emaciation of cancer, as manifested by the yellowish pallor, the "beseeching" look, and the countenance of mute suffering, may greatly aid in the corroboration of our suspicions. As has been already noted in the case reported, aspiration only yielded blood without cancer cells, although the latter were readily demonstrated after death. Still, in our cited instance, the bore of the needle may have simply proved inadequate for their passage, inasmuch as was noticed that even the complete exhaustion of air brought only a very trifling amount of fluid.

Percussion, owing to the variable position of the intestines and the soft, yielding nature of the tumor itself, is not altogether trustworthy unless adhesions and apposition to the abdominal wall have excluded this source of error. Again says Ebstein, an exhaustive writer on the subject, the tumor *does not* follow the movements of the diaphragm, probably on account of the adhesions of the degenerated organ to the surrounding parts.

The absence of pain is not enough to exclude the existence of a renal neoplasm; it may be present constantly or only occasionally; but be this as it may, the subjects being children, we can not, as a rule, trust to their unintentional fabrications and ready replies to beguiling leading questions.

The right kidney, according to authorities, is more apt to be involved than the left; that is, taking the summary of all the cases, both infantile and adult. In infantile life, so far as sex is concerned, the disease has no marked preference for either. In adult life, the female enjoys a greater immunity from cancer of this organ; the uterus, as a rule, taking the brunt of attack, the *mammæ* next.

DISCUSSION.

DR. EDWARD HAMILL, of Suffolk County.—I was much interested in the paper just read ; there was one remark certainly which struck me rather forcibly ; it was that the diagnosis of a case of this kind was comparatively easy. For one, I can appreciate its difficulties.

A woman, the wife of a physician and the mother of two children, looked the picture of health ; the first child was delivered by instruments ; the second labor was normal. Five years after the birth of the second child she complained of pain in the right side, and made me an office visit, when I detected a tumor in the right hypochondriac region, which had a sensation of soreness, somewhat relieved by pressure. The tumor, rather movable, could be separated from the liver, and had been there, according to her statement, some eight or nine months. There were present hæmaturia, pus and albumen in the urine, but neither crystals nor casts. The menstrual function was normal. I could not give a decided opinion on the tumor. The case was seen by a physician of New York city, who pronounced it to be cancer of the kidney, and subsequently by another, who gave as his diagnosis a stone in the pelvis of the kidney, and advised its extraction. Now, both of these gentlemen have a national reputation. After the lapse of a year and a half both the hæmaturia and pus disappeared, and at present the patient is apparently well. There had been during all this while attacks of fever of an intermittent type, with uncertain ranges of temperature, and, to anticipate every criticism, let me at once say that there was no malaria where she lived. There was no ascites, no anasarca, no emaciation. The case is interesting also because a medical friend, another resident of New York, and by no means unknown also, said in conversation, that it was a movable kidney. He, however, did not see the case. There had been, I should have said before, no history of cancer in the family. I think the case interesting because of the different opinions passed upon it by these eminent medical gentlemen. The diagnosis, therefore, can not be, it seems to me, easy.

DR. SHRADY.—Perhaps, so far as Dr. Hamill's allusion to adult

cases is concerned, he is quite correct, but I desire to be understood as referring only to the very young. My context may not have been sufficiently clear, but such was my intended meaning. Of course, in the child we have a ready means of diagnosis by exclusion. Physical exploration is also not so likely to confuse us by a multitude of probabilities.

In the case which formed the subject of my paper, the ovary on that side, as being at that age rudimentary in development, not at all active in function, and amply protected against traumatism, needed not to have received a measure of our suspicions. The tumor was readily recognized, because it was practically a closed sac filled with a fluid-like substance almost to bursting, at least it felt so. There could not, then, have well been any other solution of the problem than that which a little reflection so readily suggested. In a male of corresponding age the diagnosis would have been still more easy.

In the adult, on the other hand, the difficulties increase—the tumor is likely to be secondary in its character and one of a series—it is not congenital, and, being firmer in character and slower in growth, with more of superjacent tissue to obscure investigation, may not be so palpable to the touch. And yet the rational symptoms will point to serious trouble somewhere, and here of all diseases cancer usually shows the most disturbance.

SPONDYLITIS AND ROTARY LATERAL CURVATURE OF SPINE—THEIR PROPER TREATMENT PRACTICALLY DEMONSTRATED WITH EXHIBITION OF CASES.

By LEWIS A. SAYRE, M. D., of New York County.

Read November 20, 1885.

PART I.

NOTWITHSTANDING the somewhat abundant literature of spinal caries, I still feel that there is much to be said concerning what constitutes the correct method of treatment.

Before beginning my demonstrations, however, I desire to make a few preliminary remarks regarding the ætiology and diagnosis of this disease. I wish all to bear in mind that it is an inflammation of the vertebræ, and differs entirely from the deformity which arises in lateral curvature of the spine, of which I shall speak hereafter.

The first accurate description was by Sir Percival Pott in 1783, and in honor of his name it has since been called "Pott's disease"; but, as it is essentially a destructive inflammation of the bones of the vertebræ, I prefer to use the more accurate term "spondylitis" as suggesting its ætiology and location.

With regard to this affection, the causes are predisposing and exciting. Under the former we may class those of hereditary taint, bad constitution, or of strumous diathesis, whether inherited or acquired. Under the head of exciting causes are to be included injuries of whatever nature; and even the vitiated constitution requires more or less of an injury as an exciting cause, and the essential difficulty can, therefore, almost always be traced to traumatism; the injury received may be trivial and

escape attention ; the suffering, perhaps not very severe at the start, may be attributed to rheumatism or to "growing pains," and a physician may not see the case until after faith in home-remedies has been lost. All this procrastination does not give an opportunity for an examination until the projection of the spinous processes at some point or another is quite evident. The pains which have been previously complained of are, as a rule, generally felt at the distal extremity of the nerve filaments which have their origin at the seat of disease.

When the difficulty has advanced so far that inflammatory softening and degeneration of the bone have taken place, the weight of the body upon the parts involved will cause absorption most markedly upon the anterior portion of the bodies of the vertebræ, and, as these lose their thickness at this point, the bodies fall together. This causes the spinous processes to assume a peculiarly shaped prominence, which has originated the name, posterior angular curvature.

Now as to the symptoms. These, of course, vary according to the location of the disease in the spinal column, and, bearing out my remark at the start, namely, that the pains are usually felt at the distal extremities of the nerves arising from the spinal cord at the seat of the disease, you will find that if they occur in the cervical region you may notice difficulty in deglutition, choking sensations as of a string around the throat, trouble in the larynx producing a constant hacking cough together with pain in the thorax, also numb sensations in the arms and fingers. If the disease be in the dorsal region, you will often be told of pains in the chest or upper part of the abdomen, with a sense of constriction around the body, complicated with indigestion and difficulties of a like character. Again, should the disease be at the lower dorsal or lumbar region, you may expect to find abdominal pains, flatulence and colic, constipation, urinary difficulties with a sense of girdling around the belly ; this condition of affairs may also be aggravated by pains extending down the thighs and legs resembling sciatica, followed in some cases with partial loss of power in the lower extremities.

But in the early stages of the disease these symptoms, fre-

quently so vague, may seem not to be of importance sufficient to demand a stripping of the patient for the purpose of making a thorough examination of the entire body; and you may be thus easily led into the false diagnosis of rheumatism or neuralgia, and, also, as a natural consequence, into errors of treatment.

Having led you to appreciate the importance of attention to details, which in a mere cursory examination you may have neglected, allow me to throw out some hints regarding the most satisfactory procedure. I would suggest that after stripping the child naked you lay him across your lap, face downward, with the arms over one thigh and the legs over the other, and then gradually separate your thighs. When that is done the first thing you will probably notice, if spondylitis be present, will be that the child takes a long breath, a sigh of relief; and this leads me to speak of another symptom which I have omitted to mention. When the child is walking about, particularly if the disease be in the dorsal or lower cervical region, he will breathe in a short, grunting manner, because of the constant effort on the part of the muscles to hold the trunk still. In other words, he is constantly striving after the advantages of a muscular splint on the body to prevent motion in the spinal column. In some cases the pressure upon the intercostal nerves is frequently so great as to produce almost spasmodic respiration. The long sigh exactly expresses the relief afforded by the gradual extension upon the spine, which takes off the pressure from the inflamed parts and reduces the muscular irritation to a minimum. But in your glee at this discovery you must not carry your extension so far as to produce reflex muscular contraction. This condition of comfort gives place to the opposite when you let up on your extension. You may intensify the pain by placing one hand upon the head and the other under the sacrum, and crowding the bodies of the vertebræ together. The instant this is done you will see a spasm probably of both legs and arms, while the child at the same time will scream with pain; but the moment extension is made he will be perfectly easy again.

The responses to these tests may be obtained when the dis-

ease is in the anterior part of the bodies of the vertebræ, or in the intervertebral discs; but it may be that in the case before you the anterior portion of the bodies and the discs have not yet become involved, and yet the patient may be suffering from spondylitis. Consider, then, that when the dorsal portion of the spinal column is affected the disease does not always at first attack the anterior portion of the bodies of the vertebræ, but that the part most extensively involved may be upon the sides of the vertebræ where they form a junction with the ribs. Therefore, you should not be content with examining the anterior portion of the bodies of the vertebræ only, but you must test the sides of the vertebræ by crowding the heads of the ribs against their articular facets. By pressing upon the ribs separately, in the manner here shown, the exact location of the disease may be determined. In some extremely vague cases the use of heat, cold, or electricity may be a valuable aid in the diagnosis of the case, as well as Dr. Seguin's surface thermometer for its sensitiveness in the detection of the slightest elevation of temperature at the seat of disease. Briefly, then, I wish to make these points: spondylitis is the result of injury in almost all cases; that this injury is followed by inflammatory action; and that it may be diagnosticated by extension, counter-extension, and by vertical pressure upon the spine, likewise by pressure upon the sides of the vertebræ; also, added to these, by symptoms referable to the distal extremities of the nerves involved in the disease long before any deformity is apparent; and, being recognized in this early stage, it may, by a correct method of treatment, frequently be cured *without any deformity occurring*.

By the correct method of treating spinal caries I mean the fixation and support of the spine in such a manner as to relieve the diseased vertebræ from pressure, prevent all friction, and thus free the patient from pain, while at the same time allowing him to have the privilege of out-door exercise, and in many instances to follow his daily vocation.

The necessity for calling your attention to this subject is still more evident by referring to an annual report of a public institution in our own city. Although this same institution is

set apart for the especial treatment of this disease and other deformities, and maintained to a certain extent by public contributions, yet the resident physician openly announces in his annual report that those means for the treatment of deformities or diseases of the joints which are recognized by the most intelligent of the profession in all parts of the civilized world are absolutely prohibited from being employed in this institution.¹

Scarcely a day passes in which I do not receive a patient from some distant section of the country who has suffered months, and sometimes years, of torture from spondylitis and improper treatment. He is immediately relieved from all pain as soon as the proper method of treatment is adopted. All of this suffering might as well have been avoided by a resort to the only correct plan of treatment.

I admit that, as to the proper application of instruments, and the style of instruments required, there may be a diversity of opinion; but as touching the indications to be fulfilled, which I have so decidedly emphasized, there can be no dispute. By giving your patient rest, and relieving the parts involved from pressure both by day and night, you best have gained your end.

The instruments devised for the purposes mentioned are almost without number, and as examples of mechanical ingenuity they are of the highest standard.

Being conversant with the ideas of medical men upon these points, by reason of daily contact with them, and being familiar with the devices alleged to be curative, I have naturally thought much, and have come to very positive conclusions. May I not be competent, also, to speak critically of most of the instru-

¹ For proof of this statement I refer to page 15 of the "Twentieth Annual Report of the New York Society for the Relief of the Ruptured and Crippled," in which it states: "Weights and pulleys to extend the diseased limbs, or plaster jackets, are never used in this hospital, as we believe them to be mere palliatives in treatment, and often injurious."

Such a report emanating from the resident physician in his individual capacity might be harmless, but, with the names of some of our ablest practitioners appended as the "Consulting Board," it can not be regarded in any other light than as exerting a most diastrous effect upon the community. As all these gentlemen are in the position of indorsing the false doctrine, I deem it my duty to expose errors like this to the profession.

ments brought to notice? I pray that you do not accuse me of an undue affection for the plaster-of-Paris jacket, because it is an invention of my own, but let it stand upon its own merits. This jacket must be properly applied—this is essential for success. I speak without egotism, but with authority based upon experience. I have selected a few cases for your inspection, the histories of which have been copied from my note-books.

CASE I.—*January 16, 1882.*—J. K., aged three years and ten months; family history good. Patient had severe attack of diarrhœa lasting some months, also has had whooping-cough, measles, and bronchitis. When twelve months old the father noticed a projection of the spine. He consulted an eminent surgeon, who pronounced it spinal disease, and sent him to the Forty-second Street Hospital, where a brace was advised; the child could then stand and walk without support; a brace was applied at that institution and was worn for fourteen months. At the end of that time the child was much worse, and the deformity had greatly increased. He was then taken to another physician, who applied a plaster jacket without the head-rest.¹ This failed to give him any relief, and he was taken to another physician, whose treatment also was not a whit more successful—he applying a broad bandage around the middle of the body, and then rubbing wet plaster of Paris over it—no shirt having been used. This gave the child so much discomfort that he was brought to me, January 16, 1882, unable to stand without assistance, extremely emaciated, and suffering great pain. I applied a jacket and jury-mast on the 18th, and as soon as the plaster had set he was able to walk without assistance, and without resting his hands upon his knees. He continued to improve from this time, and never suffered any pain from the time of the application of the first jacket.

New jackets were applied every few months, as the child's growth required frequent renewals. He has had eight altogether.

Some two months since an abscess appeared in each groin, but they have given him no pain, and apparently have not disturbed

¹ In a child so young as this it is frequently impossible to apply a plaster jacket with jury-mast, because the pelvis is not sufficiently developed to give it proper support. In all such young children the "cuirass with head extension" is preferable.

his general improvement. These were both aspirated but will probably refill. You see that he is now entirely free from pain, and runs around with great activity, notwithstanding the abscess in each groin.



FIG. 1.

ity was visible, but that two months after the brace was applied a prominence upon the spine was noticed, which has kept increasing up to the present time. He was afterward taken to the Fifty-ninth Street Dispensary, where a Taylor brace was applied without any relief; during that time he was unable to stand, being confined to his bed.

When he came to me he was suffering extremely, and could not stand, even with the brace applied, without supporting himself by placing his hands on his knees, as in Fig. 1, from photograph. The deformity of the spine was very strongly marked, the angle being almost acute in the region of the eighth, ninth, and tenth dorsal vertebræ. I at once applied the plaster jacket without the jury-mast, but was compelled to afterward apply the latter also; the result being that he was freed from all pain, and had perfect use of his legs, and could stand erect without support, as seen in Fig. 2, also from photograph.

CASE II.—*May 3, 1882.*—D. F., aged five years; family history good. In August, of 1880, while sliding down the banisters, he fell over into the hall, striking on his head. About three days after the child walked very stiffly; this difficulty kept increasing, and a month from the time of the accident he was taken to the Forty-second Street Hospital, where a diagnosis of spondylitis was made, and a brace applied. At that time the mother

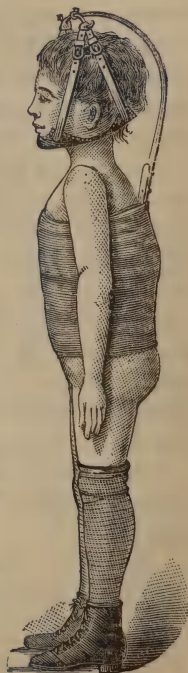


FIG. 2.

August 11, 1885.—Since previous date new jackets have been applied from time to time as required, according as the child grew. He is now almost consolidated, and to-day the jacket was applied and made into a corset, as seen in Fig. 3. He is in perfect health and never complains, the disease having been arrested at the very point when he first came under my care, the deformity now existing being the same as it was then.

At the present time his general health is excellent, and he appears perfectly consolidated, and can walk erect, and concuss upon his heels even when the jacket is removed, as you see; but I advise him to wear it as a corset for a few months longer, by way of precaution, and shall therefore replace it.

CASE III.—*January 15, 1883.*—L. A. G., aged four years and three months. Family history good. One year ago, the boy fell from a chair, striking upon his back, in the upper dorsal region. One month after, he began to walk in a peculiar manner, and the family physician, on examination, found him suffering from spondylitis. In July, 1884, a brace was applied to the child, but the deformity rapidly increased, and he suffered continual pain. Dr. Johnson, of Brooklyn, being then consulted, sent him to me.

On examination, I found him suffering from spondylitis of the fifth, sixth, and seventh dorsal vertebræ, the spinous processes being very prominent. He was suffering intense pain in the stomach and sides, and could not stand without assistance.

I applied a plaster jacket and jury-mast, which, when set, gave him perfect support, and enabled him to walk without assistance.¹

¹ *January 21, 1886.*—During the time he has been under my care, he has had ten plaster jackets applied, according as he increased in growth. To-day I find him perfectly consolidated, can jump on his heels and bear pressure on the head without causing any pain. His health now is excellent, but I have to-day applied a plaster jacket without the jury-mast, and made it into a corset, as a protection against accident.

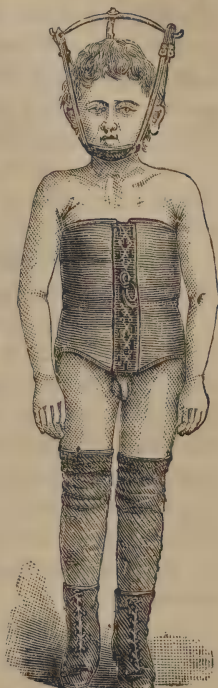


FIG. 3.

CASE IV.—*January 14, 1884.*—M. E. K., aged five years. Parents healthy ; no other children. When the patient was two years of age she commenced to run down in her general health, the family physician treating her constitutionally for several months, using internal remedies. He finally called another physician in consultation, and, after a careful examination, a diagnosis of spondylitis was made, the disease being located in the seventh cervical and first, second, and third dorsal vertebræ. They then applied a plaster-of-Paris jacket, without the jury-mast, which failed to effect any good result ; new jackets were, however, applied, the mother states, every two to four weeks, until two months ago, when they were abandoned.

When I first saw the child, she was well nourished, but suffering intense pain whenever she took her hand from under her chin. Whether sitting or walking, this was a favorite means of supporting the head. Her customary seat was an arm-chair, because she could curl herself up and rest her chin on the arm of her chair. She could not bear the slightest jar, and ever so slight pressure on the head, caused a spasm over the body ; respiration was labored and grunting ; this, however, immediately ceased when traction was made upward, under the chin and occiput, her respiration then became more natural, and she would then say "it felt good."

Diagnosis.—Spondylitis of the first, second, and third dorsal vertebræ.

I applied a plaster jacket and jury-mast a few days after, with the result of relieving the child of all her painful symptoms, and she walked out of the office with her hands by her sides, instead of supporting her head as formerly.

January 29th.—New jacket and jury-mast applied, as, for some reason, the last one did not set well and broke down the day after she reached home.

April 5th.—Child at office, has made very marked improvement, suffers no pain at all.

May 27th.—Still improving ; in a few days leaves for the country, where she will spend the summer.

September 26th.—During her stay in the country she has had a severe attack of measles ; the jacket, however, was not removed, and she is now in excellent health, her spinal trouble being very much improved. New jacket applied to-day.

January 30, 1885.—New jacket applied ; the patient is still improving.

April 13th.—She is in excellent health ; frolics around with other children and never complains.

November 20th.—Another jacket was applied a few weeks ago, she having worn its predecessor from April up to that time ; she is in excellent health, as shown by her present condition, and as you see she has a scarcely perceptible deformity.

CASE V.—*May 24, 1884.*—T. L., stone-mason by trade, has always been very strong and robust up to seven years ago, and weighed when at his best two hundred pounds.

Seven years ago he had congestion of the lungs, and since that time he has never considered himself well. Three years after that attack he strained his back while lifting a log, and soon after this went to City Island for his health, since during the previous three years he had been compelled at intervals to give up all work. He now began to complain of his back, saying that the least jar would hurt him very much. He then placed himself under the care of a physician, who treated him for dyspepsia and catarrh of the stomach ; at that time he was suffering severely with his back, had cramps and pains through the abdomen ; his attendant finally gave the case up, when he came to New York to consult an eminent physician, under whose care he was for three months. He kept gradually getting worse, until at last he was unable to bear the journey to the city. He was then treated for dyspepsia by one of his home physicians, who finally advised him to go to the "Home for Incurables," at Fordham. This was in 1881, when the man could hardly walk, and would fall without a moment's warning, being almost paralyzed in his legs. Whenever he desired to descend the stairs, he would be obliged to assume the sitting posture and work himself down with his arms as best he could. During all of this time the man was losing flesh. He succeeded in getting into the "Home for Incurables" on October 7, 1881, and was there examined by Dr. Campbell, the house physician, who diagnosticated the case as dependent upon some spinal difficulty, and sent for me.

I saw the man on the following Sunday, and upon examination found him suffering from spondylitis of the middle dorsal vertebrae, being almost paralyzed in his legs, and suffering great pain

in his spine and abdomen. I then partially suspended him, which gave him immediate relief, and, while in this position and free from pain, I applied the plaster jacket without the jury-mast; it was, however, worn for only a week, as it failed to afford him the desired relief. I saw him the week following and then applied the jacket with the jury-mast. When this had been properly applied, and the chin-collar carefully adjusted, he was entirely free from all pain, and after the jacket had become hardened was able to walk out-of-doors.

He remained in the Home five weeks after I had applied this jacket, continuing to improve during the whole of that time. He then returned to his own home, as he was able to attend to all his wants, and could take moderate out-door exercise. This jacket was worn for nine months; I then applied another plaster jacket, but this time without the jury-mast, and also made it into a corset so that he could take it off when he wished to bathe. He was at that time very greatly improved but not yet able to attend to manual labor.

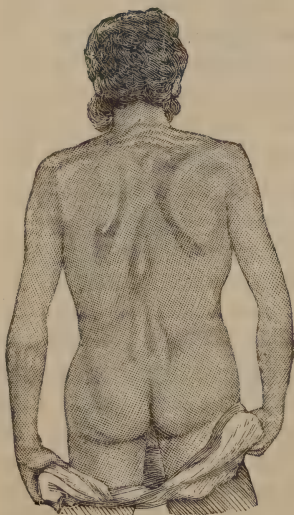


FIG. 4.

May 24, 1884.—New corset applied, walked three quarters of a mile, part of the distance to my office. At times he has slight pain in his back, but states that he is better than at any time since the onset of the disease, and can walk up and down stairs like any other person, a feat which he was not able to accomplish for four years.

At the right thigh there is an immense abscess, extending from behind the trochanter major under the glutei muscles to the inner side of the thigh; as yet no signs of it pointing. Returned home with instructions to apply hot poultices to the abscess constantly, and to return again in two weeks.

June 8th.—Abscess ruptured spontaneously, and the patient states discharged about five pints of pus, and the day following discharged three pints more. This seemed to relieve him very much.

July 6, 1885.—Has now worn the last corset for over a year. There is slight discharge from the abscess. A few days ago he returned to his trade. Can now percuss upon his heels without pain, and does not as yet need a new corset.

November 20th.—Slight discharge from the abscess ; general health good, as you see.¹

CASE VI.—*June 7, 1884.*—E. T., four years old ; family history good. The patient was always healthy until she reached the age of two and a half years. Six months before that she had a severe fall over a wash-tub, when, six months thereafter, she began to complain of pain in her back and sides. The parents consulted their family physician, who, on examination, detected spinal difficulty, and referred them to the Forty-second Street Hospital. They took the child there thirteen months ago, and, as advised, had a brace applied. The mother says that then there was but slight prominence visible upon the spine, but that it has been growing more and more marked, until now there is a decided projection of the fourth, fifth, sixth, and seventh dorsal vertebræ.

Three weeks ago patient was brought to me. At that time there were very bad sores on each side of the spine, caused by the pressure of the brace ; there were also slight excoriations on the ilia. She could walk fairly well with the brace ; but when it was removed she was compelled to support herself upon some object. Extension in suspension apparatus at once relieves the child—she says “it feels nice.”

I ordered the little patient to be put to bed without brace until the excoriations were healed, when she might return for application of plaster jacket and jury-mast.

June 17th.—The child returned to-day. She can stand without support ; so I decided to put on the jacket and jury-mast as a corset, to be removed once a week for the sake of cleanliness.

July 15th.—Child at office feeling quite comfortable. She has not complained since jacket was applied.

September 4th.—Child at office, still doing well.

January 20, 1885.—Child apparently losing ground. A new jacket applied solid.

¹ *January 4, 1886.*—New corset applied, consolidation complete. I advised the wearing of the jacket for a time longer to guard against accident. Photograph taken to-day by Dr. R. H. Sayre shows extent of deformity. (See Fig. 4.)

June 2d.—New jacket applied, as old one seemed too tight ; general condition very poor ; she seems to be losing control of her legs, and does not increase in height ; she does not, however, complain of pain, and there is no advance in deformity.



FIG. 5.

August 18th.—Growth of child not yet manifest ; general condition poor ; the pelvis, too, has not increased in proportion to the body, and is so small that it does not afford good support for jacket, I therefore decided to put her in wire cuirass with head extension attached. This was at once done (Fig. 5).

September 3d.—She is again at office ; has not complained of any pain since being in cuirass, and looks much better.

November 20th.—Child still improving, and commencing to grow ; health good, as you may observe. As soon as the pelvis is sufficiently developed, I shall remove the cuirass and apply the plaster jacket and jury-mast.

CASE VII.—August 11, 1884.—Wm. Mc—, aged five years and eight months. The father is healthy ; the mother's constitution not good. The patient was always well until he reached the age of two

and a half years ; he then complained of pains in his stomach, and would scream when he was lifted up. The family physician pronounced it "worms," and treated him accordingly, but failed to afford any relief.

When he was three years old the grandmother noticed a small lump on the spine, and was advised to take him to the Forty-second Street Hospital, where the diagnosis of spondylitis was made. While there a brace was applied, the same as is customary in that institution, and which has been worn up to the present time ; and the grandmother, who takes care of the boy, states the deformity has steadily increased during the whole of that time.

On examination, I found the boy suffering from spondylitis of

the lower dorsal and all the lumbar vertebræ, with a very sharp antero-posterior curvature at the fourth and fifth lumbar vertebræ, coming off from the sacrum at almost a right angle. He was compelled to support himself with his hands upon his knees, or some object, even with the brace which he was then wearing; the ribs were pressed down so as almost to touch the ilium, making it very difficult to apply the plaster jacket. I, however, was fortunate in getting an excellent support, and so made the jacket a complete success, the child walking out of the office erect and free from all pain.¹

September 18th.—New jacket applied, as the immense distension of the abdomen has disappeared, and the jacket seemed too loose. He has made a marked improvement, sleeps and eats well, and never complains.

November 22d.—New jacket applied. Patient still improving.

April 7, 1885.—New jacket applied. Patient is in excellent condition.

July 20th.—New jacket applied, and made into a corset for the first time.

November 16th.—New corset applied. Patient in excellent health.

CASE VIII.—*December 2, 1884.*—W. W. A., aged three years; the parents as well as the two other children are quite healthy. This boy never required any medical attention, and walked well at two years of age. About this time he fell off the back of his brother, who was crawling along on the floor playing horse, striking on his head. About six months before this, he had complained of pains in his stomach, and at times could not hold himself straight, and would bend himself forward. The family physician pronounced the trouble to be indigestion.

Dr. ———, of Philadelphia, saw the child about a year ago and correctly tracing the difficulty to the spine, ordered him to his instrument-maker, who applied a brace. The deformity, however, kept increasing, and at the present time the boy can not walk unless he has support.

When he was brought to me his condition was as follows: A

¹ As the disease was so low down, I found there was no necessity to apply the jury-mast, sufficient support being secured by the jacket alone; and it has been satisfactory, as shown by the improved condition of the patient before you.

small, but tolerably healthy looking child ; suffering from spondylitis of the seventh, eighth, and ninth dorsal vertebræ, with very marked prominence ; can not walk without the brace he is now wearing ; the abdomen is greatly distended, and the pelvis is not sufficiently developed to allow of the application of the plaster jacket.

Treatment.—To be placed in the wire cuirass with jury-mast and head-rest until such time as the disease is cured or the pelvis suffi-



FIG. 6.



FIG. 7.

ciently developed to allow of the application of the plaster jacket and jury-mast. This treatment was at once adopted. (See Fig. 6.)

July 3, 1885.—General health excellent ; he has increased very much in size. To-day I applied the jacket and jury-mast, which are to be worn night and day. After the jacket was applied he could walk a few steps with but slight assistance. Parents returned home with the child the same day.

September 3d.—New jacket applied ; the boy is now running all around, and is in perfect health. (See Fig. 7.)

November 20, 1885.—New jacket applied at the Carnegie Laboratory before the meeting of the New York State Medical Association. The boy is in perfect health, and the deformity has not increased in the least since coming under my treatment.

CASE IX.—*April 14, 1885.*—M. F., aged four and a half years; parents apparently healthy; they have lost one child from hip disease.

Sixteen months ago this child suffered from a severe cough which lasted six months. At the end of that time the parents thought there was something the matter with his spine. Six months ago he was seen by a well-known physician of this city, who pronounced it spinal disease, and advised the child to be taken to the Forty-second Street Hospital. He remained there for three weeks with a brace. In December, 1884, he was taken to the Thirty-fourth Street Dispensary, where a plaster jacket and jury-mast were applied; but, the apparatus not having been sufficiently molded, the crests of the ilium failed to give both support and relief. The jury-mast was pressing on the top of the child's head, and only served to add to his suffering, because of the improper application of the jacket. Four jackets were applied in that institution, the last two of which I saw, the fault in them being as I have stated. Dr. Gibney, recognizing the difficulties in the case, and the failure of his assistants to afford relief, kindly sent the child to me for treatment.

When he came to my office, the jury-mast was resting on his head; he was holding his head up with one hand under his chin, and appeared to be suffering very much, having a constant cough, with a grunting respiration. The disease I found to be located in the lower cervical vertebræ, with quite a marked prominence of the spinous processes.

April 22d.—To-day I applied the plaster-of-Paris jacket, the boy being partially suspended. I did not, however, apply the jury-mast, but waited until the next day for the hardening of the jacket, so as to be certain to secure sufficient support upon the crests of the ilium. After the application of the jury-mast, and the adjustment of the chin-collar, I gained just enough traction to relieve the pain, when the cough immediately ceased and the respiration became normal. The boy walked home with his hands at his sides instead of supporting his head as heretofore.

June, 1885.—My patient has grown out of his jacket, it being now too tight. It was then cut open and allowed to gape, after having been fortified with another bandage.

September 23d.—New jacket applied before the class at Bellevue Hospital. He is in excellent condition, and never complains of pain.

November 20th.—The boy is still improving, and now walks well, as you see, with a perfectly free respiration, and without a cough.

The plan of treatment adopted in this case, of accurately molding the inside plaster jacket in at the waist and on the crests of the ilium, and then allowing it to "set," or become thoroughly hardened, before applying the jury-mast, is of immense importance, and I therefore beg to call your especial attention to it.

CASE X.—September 23, 1885.—M. S., boy, one of fourteen children, all of whom, as well as parents, are quite healthy. In July, of 1883, he was brought to me by the family physician, Dr. Rand, for examination. I then found him suffering from the first stage of hip-joint disease. My instructions faithfully followed out by the doctor resulted in a perfect cure. One year ago his physician noticed him limping again, and found him suffering from periostitis and caries of the os calcis of the opposite leg. He made a clean incision down to the bone and scraped out the necrosed portion; this operation had to be repeated, however, before the wound entirely healed.

Not quite four months ago the boy again began to show a little lameness, and kept his head sunk between his shoulders; this continuing for a short time, there followed another consultation with the family physician. He discovered disease of the spine, and advised the parents to again consult me. I found him suffering from spondylitis of the middle and upper dorsal vertebræ. Pressure upon the head or jumping on the floor caused him intense pain; while traction upward, under the arms, chin, and occiput gave immediate relief.

September 25th.—I applied a plaster-of-Paris jacket and jury-mast, before the class at Bellevue Hospital, and succeeded in making the boy perfectly comfortable, as you see him now before you.¹

¹ *December 1st.*—Mrs. S. brought the boy to my office, stating that "he could not eat enough, as he had grown too big for his jacket." Previous to this last

CASE XI.—*May 13, 1885.*—G. W. N., aged fifteen years. Father, circus-rider, subject to rheumatism. Mother states she was treated in Boston some twenty years ago for spinal disease, and wore a brace for six months, since which time she has had no further trouble.

This boy has had ague ever since he was two years old, has had measles, whooping-cough, and recently intermittent fever, the last attack occurring two years ago. Since that time, he has complained of pain in his back, sides, and limbs. He does not remember ever to have hurt himself, although constantly jumping off his wagon to deliver milk.

I found him to be a healthy boy, with projection of the seventh, eighth, and ninth dorsal vertebræ. Percussion upon the heels increases his pain, while partial suspension relieves him. My diagnosis, spondylitis.

week she said "he had been perfectly comfortable, and had been running around with the other children."

The jacket was at once cut open and allowed to gape a little, after being secured by the usual bandage. I then directed the mother to take him home and bathe him well, and return in two days, when I would apply a new jacket.

December 3d.—Received a letter from the mother, stating "the child was suffering from a severe vomiting caused by over-eating, and that she could not keep her appointment."

December 7th.—The family physician called upon me, saying he had great fear of paralysis in the case of the child, and thought he had symptoms of compression of the spinal cord, as he was unable to stand, and had severe pains in his limbs ever since the jacket had been removed. I directed that the jacket be at once reapplied snugly with a roller-bandage, and a fenestra cut over the prominent vertebræ, in order to avoid any pressure at that point. The head I directed to be supported by the chin-collar and jury-mast.

December 8th.—Dr. R. H. Sayre called at the house to see the child, and found him much improved. The family physician stating that, as soon as he cut the fenestra in the jacket and applied it as I suggested, the pains all disappeared from the legs and he could walk alone again.

December 10th.—Mrs. S. brought the boy to my office feeling much better. A plaster-of-Paris jacket was at once applied with the jury-mast. An hour after he left my office, and it being lunch-time, they visited a restaurant, where (so the mother states) "he ate a large oyster-stew and wanted more. Then he insisted on walking home" (a distance of nearly a mile) "as he said he was all right."

February 1, 1886.—Having again grown out of his old jacket, a new one was substituted. The boy is certainly growing very rapidly. I find that on removing the old jacket, unless he be properly held, he has a return of his old pain, but is at once relieved when the new jacket is applied.

As he has obtained the position of clerk in an office, he asked me if he could not do without the jury-mast. I consented and the next day applied the plaster jacket, carrying it well up and pressing it in at the very top of the sternum, and leaving it on solid. The result was to relieve him from all pain and allow him the next day to return to his duties.

November 17th.—The patient returned to my office in perfect health. As he had grown very much, the mother had cut the jacket open from the sternum to the pubes, and then, letting it gape a little, had secured it with strips of muslin bound around it, over which she had rubbed some wet plaster of Paris, and then, when that had set, he was as comfortable as before.

A new jacket, however, is necessary, as the old one is entirely too small. He can now jump on his heels and bear pressure upon his head without pain, his health is excellent, and cure almost complete.

I therefore applied a new jacket and made it into a corset, and yesterday it was sent to my instrument-maker, where it had the lacings attached; and I now apply it to the boy before you, while he is partially suspended in the apparatus. The boy, as you see, walks as well as any one, and he tells me "that he must catch his train—homeward bound."

CASE XII.—November 15, 1885.—R. D., aged thirty-eight years; family history good. He has always been robust, and was never absent from his business on account of sickness until December of 1884; he, however, suffered some five years ago from a supposed rheumatism in his back, and received treatment for it from time to time. Ten years ago, while rowing a race, he was struck by an oar in the hands of the man behind him. He suffered severely from this injury for a week, occasionally having a sensation of pain and uneasiness in the lumbar region, which took the brunt of the blow.

In March, 1884, he consulted a prominent physician of New York, who diagnosticated his case as neuralgic rheumatism, and during the succeeding December he was confined to his bed for nine days with pain in his back and sides, and was treated for rheumatism. In the spring of 1885 he was compelled to withdraw from a game of foot-ball in consequence of intense pain caused by his striking upon the small of his back after having

been thrown. This pain never left him entirely, but would be more or less severe according to the amount of exercise taken.

On the 4th of August, 1885, he visited Sharon Springs for the purpose of taking the baths. He took twenty-six baths at a temperature of 100°, remaining in the bath each time for forty-five minutes, and at the twenty-sixth bath he was so prostrated as to be unable to dress himself, and on the following day returned home in a worse condition than before he started. Having reached home he called in another physician, who, after a careful examination, pronounced it spondylitis, which diagnosis was confirmed by an eminent surgeon of New York, who had been called in consultation. The latter advised a Taylor brace with the jury-mast, and informed the patient that he must give up work for three years at least. The brace was applied as soon as made, but the jury-mast was not used. The patient could only wear the brace during the day, as the pain deprived him of sleep at night and also interfered with his respiration. This brace, however, afforded him some relief, and at the end of a week he could walk about two blocks. It was worn for two months, and, finding he had made but little if any improvement since the end of the first week of its application, he called at my office on November 12, 1885, with his family physician, to obtain my diagnosis of his case, as there had been some question whether he was suffering from spondylitis or from rheumatism.

On examination (before the removal of his brace) he appeared to be a healthy man, although he informed me that his usual weight of one hundred and seventy pounds had been reduced to one hundred and forty pounds. The least concussion or jar upon the heels caused intense pain in the small of the back, as did also pressure upon the head. I then removed the brace, and partially suspended him by means of slings under the head and arms, and, when reaching a certain point in my traction, he informed me he was free from all pain; but it returned immediately when the traction was removed. I gave my diagnosis of spondylitis of the sixth, seventh, and eighth dorsal vertebræ, and suggested the application of the plaster-of-Paris jacket, as I thought it would give him better support than the brace he was then wearing. I advised him to see his surgeon and have him apply a plaster-of-Paris jacket. His family physician, who was present and had observed

the perfect relief that partial suspension gave him, and believing that nothing could so well sustain him in that extended position as the plaster jacket, concurred in my opinion, and they both left my office with the expectation that the former surgeon would carry out the treatment.

R. D. returned, however, not long afterward, stating that the doctor had condemned the plaster jacket as being too heavy, painful to apply, and also as being very filthy. He said that it would breed vermin, and he, in a word, declined to use it; but the patient, convinced by my principles of treatment, had resolved to give my plan a trial, and so on November 17, 1885, I applied the plaster jacket while he was partially suspended, leaving it solid. After it was set he felt almost entirely free from pain, and could walk around the office without supporting his hands on any object and without his canes. On testing his respiration by the spirometer, it was one hundred and sixty-eight inches, whereas with the brace on it was only one hundred and forty-nine. He has now worn the jacket for three days, and says he has had no discomfort whatever. He has come all the way from Brooklyn to this place, and says he is not fatigued, and that riding in the cars gave him no pain whatever, even in the rail-crossings; whereas, before the jacket was applied, he could not bear the slightest jar without suffering the greatest agony.

You now see him walking quite erect, and he concusses upon his heels quite firmly without having the slightest pain.¹

The immobility of the casing, instead of being objectionable, is decidedly advantageous in the treatment of spinal caries, because it retains the spine in the position in which the surgeon places it, and thus insures against outside interference; there

¹ On December 10, 1885, he attended his office in Wall Street and transacted matters as usual.

On December 29th he was very much improved. I applied a new jacket, as the old one was too tight.

March 12, 1886, I received a letter from him, from which I quote as follows:

" . . . All my time is occupied at the office; however, I have to report progress and tell you that my mind is much easier since I got back to business. I have found ease and comfort from the 'jacket' since the day I first put it on. My sleep is undisturbed and my strength is gaining daily. . . .

"Your most grateful patient, R. D."

can be no meddling on the part of patient, friends, or relatives. It is also perfectly porous, and allows the free transpiration of the insensible perspiration of the body. It fits with such accuracy the outlines of the trunk, both bony and muscular, that no excoriations can possibly occur if the jacket be properly applied, and, in those cases where the jury-mast is applied, the weight of the head is taken from the spinal column, thus rendering any pressure from this source upon the inflamed vertebræ impossible. Many object to the jury-mast on æsthetical grounds, but, although I have sought for an efficient substitute, I have been unable to find or devise one. Some, again, say the jacket is not cleanly, and that it breeds vermin. This remark, as you have already heard, was made to the gentleman standing before you. You may take my word for it that such an allegation is utterly false. If the surgeon, on examining his patient as he ought to before he applies the jacket, finds him infested with vermin, he should see that he is washed, before applying the jacket. Such a patient would be sent out of my office, and ordered to his bath-room, to report on the following day. Here is a jacket which I removed from a lady, the wife of a Presbyterian clergyman, a few days since, and which I had applied upon her more than four years ago, and, as you see, it is perfectly clean, without the slightest sign of vermin or any other filth. Her servant would daily dampen a towel with bay rum, or cologne water, and, with a long whalebone, push one end of it from the sternum to the pubis, and then, taking the two ends in either hand, would draw it up and down, completely surrounding her body, thus keeping the skin in a perfectly clean and healthy condition.

It is not, however, my intention to discuss the merits of the various instruments that have been introduced for the treatment of spinal caries, but to lay down the principles of treatment. I know of no better method than the application of the jacket and jury-mast while the patient is partially suspended. See what you gain for your patient—fresh air and out-door exercise. He needs no drugs, only good, nutritious food. If the constitution be depraved, medicines may be of service, but, as a general rule, they are not required.

In following out this same idea of treatment, surgeons have used various substitutes for the making of these jackets, to take the place of the plaster of Paris, among which I might mention silicate of soda, porous felt, leather, perforated or otherwise, various preparations of paper, or paper with shellac combined, etc., etc. But all these are impervious to the air, and, therefore, interfere with the insensible perspiration, causing a filthy accumulation of moisture and dead cuticle on the inner surface of the jacket. They are also much more difficult to apply, with the exception of the silicate of soda; but this, again, has the disadvantage of being harder to cut off. None of them, as a class, have the merit of plaster of Paris in being so accurately adjusted.

I have brought here this small cylinder, made out of an ordinary plaster-of-Paris bandage. It is closed at both ends, like a drum; but at one end I have made a small hole in order to admit the stem of a tobacco-pipe. Now, to avoid burning my lips, I place a piece of cloth over the lighted bowl, and, by blowing, I here cause smoke to emerge on all sides through the substance of the drum itself. I think that this is a good enough test for porosity.

Among the additional advantages of the plaster jacket may be mentioned non-interference with the respiration, since the position of the patient during the application precludes any compression of the thorax. The silicate of soda device, when adjusted under like precautions, is its only competitor. The spirometer is a witness of the accuracy of my statement. The man before you, indeed, can refute these antagonistical charges, for, previous to the application of the Taylor brace and the plaster jacket, his expiration was one hundred and forty-nine inches, but after its application it gained seventeen more inches. Then, too, he shows a greater oxygenation of the blood.

Besides skill in this matter, a close attention to details is requisite; a slight experience, however, will enable any surgeon interested in his work to apply the jacket accurately and successfully, if the rules I here give are faithfully followed out:

When you have determined to apply the plaster jacket, di-

rect your patient to secure a skin-fitting knitted shirt, long enough to reach to the upper third of the thighs, and such an article is made especially for this purpose—I secure mine from the Bickford Knitting Company, 795 Broadway, of this city. Then strip your patient of all clothing down to a line with the great trochanters, and apply the knitted shirt. If your patient be a female, place inside of the shirt, next to the skin, pads over the mammæ, to form the bust of the jacket and prevent any pressure upon these glands; over the abdomen place a folded towel to allow for the distension of the stomach after eating. If, however, the patient eat a hearty meal before the application of the jacket, the towel is scarcely needed. If, on the other hand, your patient be a male, take two towels, fold them lengthways, and let their width correspond with the breadth of the patient's chest. Over the chest you will need to fold them of extra thickness, to give more freedom to the respiration. The shirt being now fastened over the shoulders, your patient is prepared for the application of the jacket.

The necessities of the surgeon are as follows: First, block and tackle, with an iron cross bar, from which hang a leather collar and arm-slings (Fig. 8). These are so adjusted upon the patient that, when he stands erect directly under the bar, and traction is made upon the pulleys, the force is divided

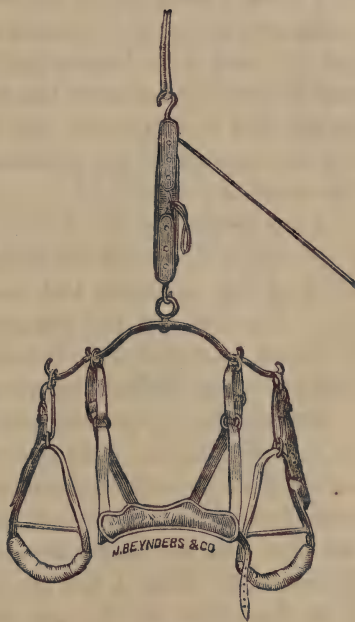


FIG. 8.

equally between the head and arms. Thus no strain is brought to bear upon the muscles of the neck if the traction be made at the point of comfort, or, to be more exact, that of entire freedom from pain. To this

I especially call your attention, namely, that your patient is better authority than yourself in this very essential matter, so that, when you reach that point where he tells you he is perfectly comfortable, there stop; and at once apply your jacket.

The plaster-of-Paris bandages are to be previously prepared as follows: From cross-barred crinoline, in three-yard lengths, tear strips of from two to four inches wide, according to the size of your patient, being careful to tear off the selvage edge of the fabric. Then take the best dental plaster you can secure—I purchase mine from the White Dental Manufacturing Company, northeast corner of Thirty-second Street and Broadway; price, \$1.25 per can—and rub it into the meshes of the crinoline, upon a long flat table, rolling it as you proceed as you would any ordinary bandage, but with this great difference, that you roll it so loosely (but not too loosely) that the water may thoroughly saturate the plaster. Do not put too much plaster into the bandage, but just see that it is well rubbed into the meshes of the crinoline, and then rub all the surplus plaster off as you proceed.

I am frequently asked how many bandages I use to make a jacket? This depends upon the size of the patient, the width of the bandages, and your thoroughness in the application. For instance, the average adult will require from eight to eleven bandages, but, if they are well rubbed in while the jacket is being applied, the number may be reduced to seven.

I would here especially call your attention to the quality of the crinoline used. I do not refer to the price, as that at nine cents a yard is sufficiently strong for all purposes, but to the substances which the manufacturer uses to stiffen the goods. I find that this has been a frequent source of disappointment to the surgeon. This is the reason why I so often receive letters from physicians in all parts of the country, saying “they can not make the plaster set,” although they have sent here to New York and secured the dental plaster which I have recommended. The essential point is, do not have the crinoline stiffened with glue or size if you can avoid it; starch, however, will not inter-

fere with your work. But, if it be stiffened with glue or size, have it washed and then ironed.

A pail with water high enough to cover well the bandages standing on end, an apron to protect your clothes, and, if within a private house, a sheet to cover the carpet, are necessary preliminaries. You now fasten the leather collar around the neck of your patient, adjusting the arm-slings and your traction, as I have previously described. An assistant sitting in front clasps the legs of your patient between his knees to prevent the swaying from side to side, and thus keeps his hands at liberty to aid you in your work.

The manipulator behind the patient, who applies the plaster bandages, begins his work, and, to expedite matters, places one of the bandages on end in the pail of water, and sees that it is thoroughly saturated—which is known by the cessation of the air-bubbles. He drops in the second and takes out the first, meanwhile pressing out the surplus water. He next begins to wind the bandage snugly around the waist of the patient, and with each turn covers two thirds of the one previously applied, carrying it in this manner down below the iliac crests to near the great trochanters, then passing back (always putting a bandage into the pail before removing the previous one) up toward the thorax, and over the mammæ, the assistant rubbing each turn of the bandage into the one previously applied, until a sufficient thickness has been obtained upon which to apply the jury-mast, which I here show you (Fig. 9). The tins on either side of this pass partially around the body of the patient. Being perforated at short intervals, first on one side, then on the other, the burr so produced is imbedded in the plaster bandages,

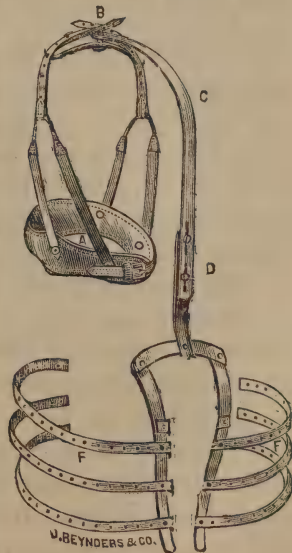


FIG. 9.

and thus the jury-mast is retained in position. Having then bent the jury-mast, if necessary, to fit the exact contour of the back, your assistant holding it in position by the strips of tin which pass nearly around the body, you secure it in such a manner that the rod passes over the center of the head, by a few turns of the plaster bandage, the while rubbing all the bandages well together to prevent any slipping of the jury-mast. This being accomplished, and the plaster sufficiently set, you take the patient under the arms, and your assistant, having removed the arm-slings and chin-collar, then places one of his hands under the buttocks and the other under the legs. In this way, by placing him in the horizontal position, you may lay him upon a soft mattress or air bed, and so avoid any cracking of the jacket while removing him from the suspension apparatus. As he lies thus you may trim the jacket out under the arms, and in front of the thighs, to allow free flexion of the lower extremities. The plaster within an hour or two will be sufficiently set to allow the application of the chin-collar to the jury-mast, and the child may return home, but should present himself on the following day in order that you may see that the application of the jacket is perfectly satisfactory, and that there is no undue pressure at any given point. If you be not satisfied at this visit, arrange to see him on the next day, or indeed for any number of times, until you have made the matter perfectly right. Never let a patient go away the same day unless you are certain that you will see him on the morrow.

This treatment—the application of the plaster jacket—of course only applies to those cases where the pelvis is sufficiently developed to afford a support to the jacket upon the iliac crests. There are cases of course where the jacket can not be applied, owing to the lack of development of the pelvis in very young children. In such cases the child should be placed in the wire cuirass with head extension (see Fig. 10), as I show you in these children now before us (see Figs. 5 and 6), the one patient being undressed, and the other dressed for the street. In each case the head, as you observe, is supported and extended by the chin-collar and jury-mast, the same as in the plaster

jacket (see Fig. 7), the traction being made by a heavy piece of elastic webbing above the head, attaching the cross-bar to the jury-mast. The principle involved in the two methods of treatment is exactly the same. The child must remain in this cuirass until the disease is cured or the pelvis sufficiently developed to apply the plaster jacket.

In the cuirass, however, the mother can carry the child out in the open air, and allow it to remain there any length of time without any inconvenience, as, being fastened into the cuirass under its clothing by an ordinary roller bandage, it is well wrapped up to guard against the weather. The child may also be placed in the upright position as though it were standing, and, if necessary, may be fastened in this position by the window, or when playing at a bench or table. The principle is precisely the same as in the plaster jacket, traction being made in the long axis of the body at all times by the elastic strap, to prevent pressure upon the inflamed vertebræ. The opening in the instrument underneath, and opposite the anus, avoids the necessity of removing the child from the cuirass to relieve the bowels, since defecation is possible in the horizontal position, over the usual vessel, or napkins may be used in the case of the very young.

Of course as soon as the pelvis has become sufficiently developed to sustain the jacket and jury-mast, if the disease has not been arrested before that time, you may resort to the jacket, as it is preferable to the cuirass, permitting as it does free and voluntary exercise.



FIG. 10.

PART II.

ROTARY LATERAL CURVATURE OF THE SPINE.

ROTARY lateral curvature of the spine is distinct from spondylitis, as being a curvature of the spine due to unequal action of the muscles on the two sides of the body, and not to any disease of the bone itself. Still, in advanced cases we, of course, find a change in the true anatomical formation of the bones of the vertebræ and also of the ribs.

The rotation, however, which takes place in this deformity is the most important part of the difficulty. You will observe that the ribs, bending at their angles, rest against the transverse processes of the vertebræ. The head of the rib, an inch or an inch and a half from this angle, rests against the bodies of the vertebræ slightly sloping upward. We thus have the ribs at their angles resting against the transverse processes of the vertebræ like a fulcrum, the short arm running to the head of the rib against the bodies of the vertebræ, and the long arm being the body of the rib. The power which moves this lever is the serratus magnus muscle, which is inserted into this long arm. Now, when the trapezius and rhomboidei of one side contract and draw the scapula backward toward the spine, they thus make tense the serratus magnus muscle on that side, and give it full power to act upon the ribs, and by this leverage rotate the spine upon itself.

This is the starting-point of the so-called lateral curvature, but, as it begins in a rotary movement of the bodies of the vertebræ, I prefer to call it rotary lateral curvature. In the lumbar curve the bodies of the vertebræ are usually twisted to the left, while in the dorsal curve to the right. Why this is so I am not prepared to say. This order, however, may be reversed.

When a curve becomes established by the action of one serratus muscle, it is liable to become greatly increased on account of the progressive relaxation of the opposite serratus muscle. Sometimes this curvature becomes so great that one lung is al-

most completely compressed, and the angles of the ribs upon that side may become almost obliterated, while those upon the opposite side become correspondingly acute.

The scapula then being thrown back, bringing these muscles into play, causes the ribs to be bent still further at their angles, and produces rotation of the bodies of the vertebræ: that is the only way in which I can satisfactorily explain the rotation which occurs. Take, for instance, those men who play upon the violin, and in whom we find the most hideous deformities of this character, and which are caused by the position they assume while practicing their profession; the specimen which I here show you (Fig. 11) is that of the spine and ribs of a violinist, who was seen during his life-time by some of the most distinguished surgeons of this city, and by them pronounced a case of spondylitis or true disease of the spine; I differed with them in the diagnosis, and at the death of the man was fortunate enough to secure this specimen and prove the correctness of my opinion.

You will notice there is no disease of the bone in any part, but the pressure has been so great, owing to muscular action, as to cause partial absorption of some of the bodies of the vertebræ; as a matter of course, when the deformity reaches this stage it is incurable. You also notice the ribs on the left side are overlapping each other, necessarily interfering with respiration.

Half of these deformities are due to want of energy, or rather want of life enough to sit up straight; they are most commonly found among those who make it a habit to loll around with their backs twisted in a half-curved position. Indulgence in such careless habits frequently develops a curve in the spinal

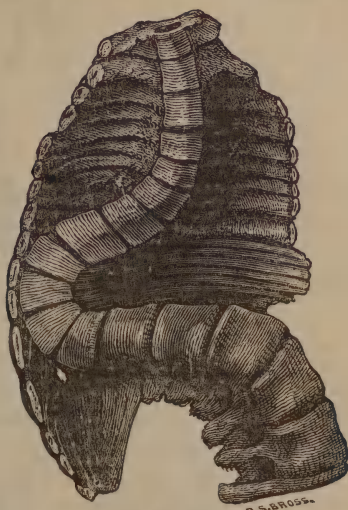


FIG. 11.

column at some point which is sufficient to establish the deformity, and then in a very short time a second curve will be developed which is compensatory. Again, fracture of the femur with shortening, disease of the joints, congenital shortening of one leg, or paralysis, arresting the growth of one side of the body, are all prominent causes which give rise to this deformity.



FIG. 12.

It is stated that this deformity occurs much more frequently in girls than in boys; but my impression is that it is developed in boys very much more commonly than is generally supposed; but it is not detected in them so readily, because they are not

so critically examined as girls. I therefore very much doubt whether sex has anything to do as a factor in its development.

It is also stated that the deformity is more frequently developed about the period of puberty, but this is I think a decided error, for, upon a careful inquiry into these very cases, you will find in many instances that the deformity has existed for many years, and in some cases even from early childhood; but no attention is paid to it until the girl begins to develop into womanhood, and comes under the practiced eye of the fashionable dress-maker. I have seen the deformity even in very young children, probably due to some injury to the spinal cord, or central nervous system, causing an arrest of development on one side, thus making an irregular growth of the body.

One of the first things which will be observed is that the lower angle of one scapula is slightly projecting, and this occurs in the very early stage of the deformity; the pelvis also becomes oblique, and you will find one hip more prominent than the other; if you stand behind such patients, their arms hanging at the side, you will notice a marked difference in the space between the elbows and the trunk, even when there is no difference in the length of the lower extremities, as seen in Fig. 12.

Another very important observation is to be made, by which the rotation will be discovered even before the deformity has become conspicuous, and that is, by drawing a line from the umbilicus to each nipple there will be found a difference frequently of from one quarter to one half an inch. This way of measurement I have not seen referred to by any authority, but I think it of great importance in detecting the early rotation.

The suffering arising from this deformity is sometimes very great, the patient being easily tired on the least exertion. Pain, lassitude, and compression of the lungs, giving rise to various anæmic difficulties, are leading features.

The treatment of rotary lateral curvature must be governed by the cause which has produced the deformity, and by the condition of the patient when first brought under notice. If the distortion be dependent upon obliquity of the pelvis, caused by inequality in the length of the lower extremities

(Fig. 13), or owing to a congenital malformation, or from disease of the joints, or fracture, thus causing obliquity of the pelvis, as a matter of course the shortened limb must be artificially increased sufficiently to equalize the length of the two limbs (see Fig. 14), before any



FIG. 13.



FIG. 14.



FIG. 15.

other treatment can be effectual. Fig. 15 is Fig. 13 partially self-suspended, showing the effect of this exercise in straightening the spine where curvature exists.

If the deformity be caused by muscular debility, or want of tone in the general system to keep the body erect, we must by proper training, gymnastic exercises, massage, nutritious diet, and tonics, restore lost vitality and increase muscular power. Careless habits in sitting, walking, or standing, must be carefully guarded against, and the vicious tendencies corrected.

When the deformity arises from pleurisy, with adhesions of one side, which has prevented an equal development of corresponding sides of the thorax, it may be very materially relieved by forcible inspiration, while the body is strongly bent to the opposite side, and the arm and hand of the collapsed side are extended to their utmost limit over the head. Another valuable

exercise for patients with this distortion is that of Mr. Bernard Roth, of London, viz., making the patient, in a very loose dress, lie prone on the floor with arms extended at right angles with the body, and the palms of the hands resting on the carpet, with the face turned toward the side of the convexity of the thorax, and the cheek on the side of the concavity resting on the floor. The patient is now in position to commence the first exercise, which is to turn the hands over, bringing the little fingers on the floor and the thumbs upward. The arms, still at right angles with the body, are then to be voluntarily raised as far as possible from the floor, while the head remains in contact with it. While in this position, some one must press upon the feet while the patient raises the head and trunk simply by the contraction of the muscles in the back, without putting the hands to the floor; now, while in this position, he or she must take a deep and forced inspiration, and then drop back into the first position, and rest at ease for a few seconds, after which the same process is to be repeated three times. This course should be pursued every night and morning, increasing the number of movements as the patient's strength improves, being careful never to carry the exercises to the point of exhaustion.

After a few minutes' rest, the patient should place the hand on the side of the convexity behind the back, and seize the buttock of the opposite side with the open palm; then put the arm on the concave side behind the head, seizing the opposite ear with the thumb and fore-finger; next, while the pelvis is still in its position, the upper part of the trunk should be twisted as far as possible around the convex side; the patient, while in this position, should again be compelled to elevate the trunk by the contraction of the spinal muscles, and at the same time should take as before a deep, forcible inspiration, and then return to the position of rest for a few moments. This movement, like the one first described must be repeated three times at first, and gradually increased proportionately to the strength gained.

Partial self-suspension will also be found a most valuable means of correcting the deformity in cases of lateral curvature,

if the principle be properly managed. This is effected by the patient having a leather collar passing under the chin and occiput, two straps passing from this up on either side of the head to an iron cross-bar, secured by means of a rope and pulley to a hook or beam in the ceiling. The patient is expected to

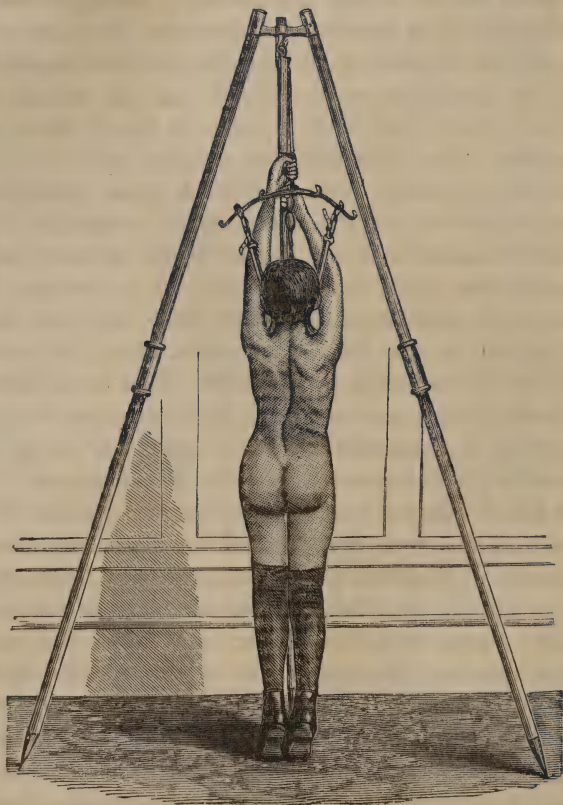


FIG. 16.

raise the arms over the head to their fullest extent, and, seizing the rope in the hands, commence to climb up hand over hand until the heels are gradually raised from the floor, barring the discomfort before this point may be reached; the toes, however, should never leave the ground. (Figs. 15 and 16.)

The hand on the side to which the concavity of the spine faces should always be the one uppermost when the patient has reached the height where the heels are raised from the floor. While holding herself in this position, the patient should take three full inspirations, then slowly descend until she once more rests firmly on the floor, allowing the arms to fall by the sides and to rest there a few moments; the same course is to be repeated in all three times. For the greater convenience of holding on to the rope, three or four wooden balls should be strung upon it, and secured at a certain point, after the patient has found out the limit of extension.

It is necessary, in the performance of this partial self-suspension, that the patient should always keep the arms extended in a perfectly straight line, and simply make each hand go over the other, and no more, so that the muscles of the trunk, rather than the neck, may bear the strain. The apparatus for this purpose may be arranged in one's own room, and may be used for exercise night and morning three times, as before described, until after some weeks, when the number of imposed tasks may be increased according to the hints already given.

The positive change produced in the existing deformity by these exercises is plainly to be seen by comparing Figs. 12 and 16 and 13 and 15, or in any case in which you may choose to make the test. Very often this deformity is produced by horse-back riding, the bridle-hand twisting the body around in the saddle. In such cases you may reverse the pommel of the saddle and ride upon the opposite side. In these cases of lateral curvature a very useful exercise is to stand in front of the patient while she is sitting upon a chair or stool, compelling her to turn and twist the trunk in the opposite direction in which the deformity exists, while you resist this movement. Another exercise is that of sitting upon a stool with the arm upon the concave side raised in front on a level with the thorax, while the arm upon the convex side of the deformity is placed behind the back; then seizing a rubber strap in either hand, the ends of which are secured to staples in the wall or door, the patient endeavors by muscular action to

unwind, as it were, the rotation of the spine, and thus overcome the deformity.

Suspension also may be made from two horizontal bars, as recommended by Mr. Adams, of London, one being from two to four inches above the other—the hand upon the concave side of the curvature of the spine being the one to grasp the upper bar; exercises upon these bars may be indulged in as often during the day as the patient may desire. Rings attached to ropes of unequal length effect the same object.

Yet another exercise is to stand upon a block or box upon the foot of the convex side, and swing the leg upon the concave side, at the same time reaching upward with the arm of the same side, as far as possible, the hand grasping a weight of from two to four pounds, and while in this position to take three full inspirations. This also may be repeated several times daily. Again, making the patient stand erect and bringing the scapulæ together by contraction of the rhomboidei muscles, the arms being placed at the sides of the body, the palms of the hands facing directly forward, and the head held well back, is an excellent posture. A light book kept balanced upon the head, and orders given to march from five to ten minutes, is a good device, for by this means the muscles of the spine are trained to keep the body in an erect position when standing. It is a well-known fact that those people who are in the habit of carrying baskets or weights upon the head never suffer from lateral curvature of the spine. In fact, if children, either boys or girls, with commencing lateral curvature had the advantages of the military drill of West Point, the majority would be cured without mechanical treatment of any kind. Massage, manipulation, with the application of electricity to the weakened muscles of the spine, are also valuable adjuvants to restore their tone and vigor. Notwithstanding that in these cases the horizontal posture should be assumed upon the slightest indication of fatigue, even to the extent of resting several times during the day, it is necessary to guard against the protests of your patient, lest they be only a cover for indolence. You will need all your sagacity to discriminate rightly and without injustice. With a due re-

gard, therefore, for the physical condition of your patient in such exigencies or contingencies, a lounge or reclining chair should be at his or her disposal, even during the hours of study. The chair or stool should have a back for the support of the spine, with a rest for reading or writing attached in front. Sometimes it would be well to tilt the chair a little to the side of the concavity of the deformed spine, for the purpose of compelling those muscles to act more than their opposing fellows, in order to retain the body in the erect position. The chair may be secured in the uneven position by small blocks of wood under the legs of the opposite side.

Strict attention to the rules here given or implied, a nutritious diet, and daily out-door exercise, will generally, without mechanical aids, suffice for a cure in the larger number of those cases where osseous deformity has not occurred.

If, on the contrary, the deformity has been allowed to progress until the angles of the ribs have become abnormally curved, and the bodies of the vertebræ, from undue pressure, have lost their true anatomical conformation, it is very questionable whether these cases may ever be perfectly restored by any kind of treatment. Still, some mechanical expedients may be necessary to keep up the improved condition brought about by the proper hygienic measures, including the frequently interrupted self-suspension, in order that no ground be lost. Some device, which your best judgment may suggest, may be required during the remainder of the life-time.

If the deformity has been permitted to progress until the ribs have become distorted and permanently bent, you can never hope to effect a complete cure, but in some cases even then you may make a wonderful improvement. When the bones have become changed in form, and the bodies of the vertebræ have become partially absorbed from pressure (Fig. 11), how can you do more than mitigate the condition by artificial support?

This brings us to the point of mechanical treatment. For this purpose innumerable devices have been contrived by surgeons, in every country, for ages past; none of these, however, I am compelled to say, have given complete satisfaction. Many of

them have been nothing more than cruel instruments of torture. A woman's strife for a proper form has in many instances made the torture tolerable. I have seen many an example of heroic fortitude perfectly surprising, even with excoriations from the misapplied pressure. I might cite instances where all treatment had to be abandoned until the skin could recover its integrity, or, more properly speaking, could attain a condition possible for an appliance that might in a measure reward our efforts. I have not the time to describe, much less to criticise, these instruments; I have a number here for your inspection, and you are at liberty to examine them at your leisure.

Having carefully tested these various devices for the relief of this deformity, I have finally abandoned them all because of their inefficiency as well as cruelty; and I have for some years past confined myself entirely to the use of the plaster-of-Paris jacket made into a corset, which can be applied by any physician in any part of the world, without recourse to the instrument-maker, and I cheerfully say that it will retain the body in the improved position which self-suspension gives it better than any other device with which I am acquainted. This jacket made into a corset is to be removed at night on retiring.

The patient, then, following out the exercises which I have laid down, the same exercises being pursued in the morning on rising and previous to the application of the corset, can not but be benefited. I beg you to remember that the corset is always to be applied to the patient while in the position of partial self-suspension, otherwise it can not fit, because it was adjusted to the body in the improved position which the partial self-suspension gave it. New jackets may be applied from time to time as improvement in the form of the patient takes place. This may vary by weeks and months in different individuals. I am unable to prognosticate as regards the element of time.

Many adults who have become seriously deformed are never capable of being improved beyond a certain point. These individuals, for comfort and support, are obliged to wear the corset during the remainder of their lives. But many now under my treatment are enabled to pursue their daily vocation who for

years previous belonged to the class of non-producers. They had resorted to every device that had ever been invented.

In the application of the plaster-of-Paris jacket in lateral curvature of the spine, the arm-slings used in spondylitis are dispensed with, unless, indeed, the patient be so weak as to interfere with the self-suspension. Having put on a tight skin-fitting knitted shirt of double the length required for the jacket, and having placed on the mammæ suitable pads according to the size of the glands, you fasten the leather collar around the neck, and then, after pulling on the rope just sufficient to make it tense, you direct the patient to extend her arms above the head and reach up on the cord as high as she can while standing flat upon the feet. Then slip up the wooden balls which are on the cord and tie a knot at that point at which the tips of her fingers touched; you now direct her to grasp the balls firmly with one hand and climb up hand over hand, the little finger of the upper hand resting upon the hand below; this she is to do until the heels are just raised from the floor, thereby evenly dividing the weight of the trunk between the neck and arms. (See Figs. 15 and 16.) You must be careful that the patient be not allowed to bend the arms at the elbows, otherwise the weight of the trunk will be brought to bear upon the muscles of the neck. No injury can occur if the arms are kept straight. Having raised herself to the required height, you must see that the hand upon the concave side of the spine is the uppermost one upon the rope. With your assistant in front you apply the jacket as before described in spondylitis, of course omitting the jury-mast unless the curve is very high up, in which case it may be occasionally required, but such are rare exceptions. In applying the jacket, it is well in those places where the patient is liable to exert the most pressure—as for instance on the concave side—to strengthen it a little by a few extra turns of the bandage half way around. In a few moments the plaster will harden sufficiently to allow the removal of the jacket while she is still self-suspended, this being effected by a section made from the center of the sterno-clavicular notch to the symphysis pubis. A sharp, curved knife—I prefer such as is used for pruning

trees—by dividing both shirt and plaster dressing, well answers your purpose.

In cases of persons who are very corpulent, after the removal of the jacket I cut out a small strip in the front of the jacket on either side at the waist, so that the lacings can be drawn even more snugly than the original bandage when the corset is complete. The strip being cut out at the waist of the jacket, as I have just mentioned, I then bring the cut edges together and bind a common roller bandage around it to prevent it from losing its shape while drying, widening the jacket above and below in order to make the edges meet, should they have overlapped when the center was drawn together. I then carefully pass my hand over the inside of the corset to see if there are any ridges, which are sometimes caused by the patient allowing the hands to slip and the body settling down. These, however, can be removed while the jacket is still soft, by pressing firmly along them with your thumb or fingers; the jacket is then put aside until the next day. The patient having put on a close-fitting shirt, to be worn under the corset, is then self-suspended, and the jacket sprung open, placed around the body, and bound closely together with a common roller bandage. She is then removed from the suspension apparatus, and the corset is cut out under the arms so as to have no pressure in the axillæ, and in front of the thighs sufficient to allow of free flexion of the lower extremities without chafing.

In many instruments which are applied for the relief of this deformity, straps or bands are passed over the shoulders and fastened to the brace, which is secured at the lower part by the pelvis belt, thus preventing the free elongation of the spine which is so essential in overcoming this deformity.

A lateral curvature of the spine can not be made straight without being made longer, as is well illustrated by the preparation I now show you.

In this specimen of the human spine (Fig. 17), for which I am greatly indebted to Dr. A. B. Judson, you observe that there is a steel spring passing up through the vertebral column, the spinous processes being secured by elastic bands on either side, holding

the spinal column perfectly erect. If, however, I press upon the top of the spring, the spine immediately assumes the position of a rotary lateral curvature (Fig. 18), and while held down in that position no amount of lateral pressure can make it straight until you remove the pressure from the top, and allow the spine to become extended. Therefore, any instrument for the relief of this deformity in which there are straps passing

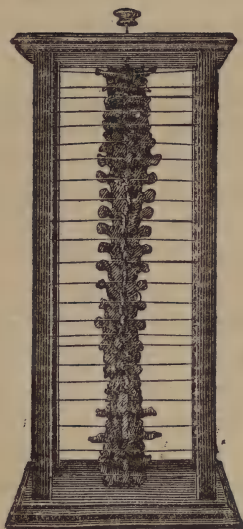


FIG. 17.

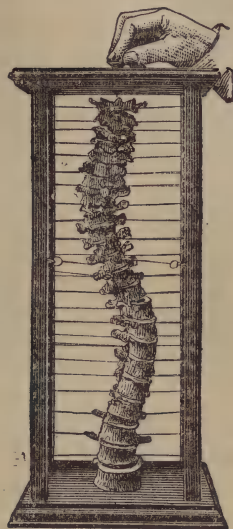


FIG. 18.

over the shoulders, thus preventing extension of the spine, defeats your object.

Again, in the treatment of rotary lateral curvature of the spine, never apply any instrument which curtails the freedom of the arms and prevents the growth of the body upward. For this reason it is that I do not use any support or appendage to the arms. On the contrary, I cut out the jacket under the arms until the patient states it is quite comfortable, and complains of no chafing or irritation. In like manner it is trimmed out in front of the thighs, to allow of flexion of the limbs. A pair of large shears, or a sharp knife, after the jacket is removed, will

enable you to smooth off the cut edges. Now place your jacket near the fire to dry slowly, and, when perfectly hard, send it to some instrument-maker or saddler to have the strips of leather with lacing-hooks attached; or, if confident of your mechanical skill, you may do it yourself.



FIG. 19.



FIG. 20.

I directed you to order the knitted shirt twice the length of the body when you apply the plaster jacket in lateral curvature of the spine. This extra length is now reversed over the outside of the jacket and sewed along the top, covering in all the plaster and giving it a neat appearance.

Leather strips, with lacing-hooks, such as are used on shoes, are sewed down the

front of the jacket, the edges in front being previously bound with kid. (Figs. 19, 20, 21.)

This, gentlemen, is a synopsis of what I consider the true therapeutics of spondylitis and rotary lateral curvature of the spine; and I am happy to state that, at the last International Congress, held at Copenhagen, 1884, these views were adopted without a dissenting voice, and even received the approval of their former opponent, Mr. William Adams, of London, in the following words: "The modifications in the plaster-of-Paris jacket which Professor Sayre has recently introduced and exhibited to the meeting seem to have perfected the jacket as a mechanical support. It is not only very much lighter, but, being open in front with lacings, it can be removed at



FIG. 21.

pleasure, for gymnastic exercises, etc.; and the patient is never to wear it at night in cases of lateral curvature, so that it can well be applied in this class of cases, to which I considered it was not previously applicable.”¹

The histories of the cases I now present to you are as follows:

CASE I.—*January 17, 1884.*—L. S., boy, aged eight years. Parents healthy. Was always thin and delicate, all the other children being strong and hearty. Dr. —, of this city, saw him in November, 1882, when curvature of the spine was first noticed, and applied a plaster jacket while on a bed in the horizontal position, leaving it on solid. This was only worn for a week, when an iron brace was applied; three braces were successively applied during the next eighteen months, but the mother states that they were constantly getting out of order and that the deformity kept increasing. The parents then brought him to me. At that time his general health was good; he had a very marked rotary lateral curvature, but by proper partial self-suspension the spine could be brought almost perfectly straight, although the rotation of the spine and increased angle of the ribs remained to a certain extent, and will never be entirely removed.

I have applied five corsets to him since January, 1884, the present one, which my assistants are now applying, being the sixth; and you may observe the marked change which partial self-suspension here effects. Since coming under my care he has followed out the gymnastic exercises he has just gone through before you, and there is a most marked improvement in his condition as shown by the photograph taken in 1884.

CASE II.—C. A. R., aged twenty-two years. This man typifies one of those unfortunate cases in which the patient, having failed to secure proper treatment in early life, is now compelled to constantly wear the corset. It affords him such support and comfort that he will not take it off even at night; and you will remember I always advise its removal at night, unless in those exceptional cases where they prefer to wear it. At the time I first saw him he was unable to follow any vocation and was

¹ See “*Congrès International Periodique des Sciences Médicales*,” 8me Session, Copenhagen, 1884, p. 226.

greatly reduced in strength; but after the application of the plaster corset he began to improve rapidly, and in a few months was able to support himself as a musician, being now a member of one of the theatre orchestras of the city.¹

CASE III.—M. B., aged eighteen years. Patient has been blind, as a sequel of scarlet fever, since she was one year old. Curvature of the spine was first noticed in 1880, and it has continued to increase ever since. Several different kinds of braces have been worn during this time.

I saw her in November of 1882, and found a well-marked double rotary lateral



FIG. 22.



FIG. 23.

curvature. (See Fig. 22.) Partial self-suspension removed the deformity to a great extent. (See Fig. 23.)

I advised appropriate gymnastic exercises, such as she has already demonstrated to you, and also the use of the plaster cor-

¹ *Vide*, case page 505, Sayre's second edition of "Orthopedic Surgery."

set during the day. During the past four years, ten corsets have been applied by me according as the deformity diminished, until as you now see her before you, she presents a spine almost as straight as any one's, the rotation of the vertebræ having also

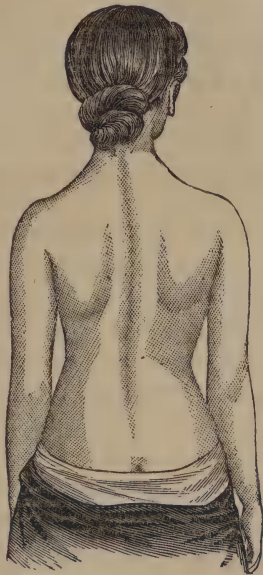


FIG. 24.

been almost entirely overcome.¹ (See Fig. 24.) Time, however, will not admit of a further demonstration of individual cases; and I do not think it necessary to multiply examples in order to convince you of the efficacy of the plan of treatment which I advocate in these cases.

¹ These three cuts are from photographs taken by the lady's brother, who is a professional photographer.

NOTES ON CONTRACTURE OF THE BLADDER CONSEQUENT UPON CYSTITIS.

By J. W. S. GOULEY, M. D., of New York County.

Read by title, November 20, 1885.

IN the following series of annotations, I have the honor to direct your attention to a condition of the urinary bladder associated with cystitis, both in the male and female, which, from the suffering it entails and the evil consequences that arise from its neglect or improper treatment, is well worthy of the serious consideration of practitioners of medicine.

This morbid condition, known as contracture of the bladder, is a state of rigidity of its muscular tissue, which often accompanies and follows cystitis and is ushered in by obstinate, frequent, and progressive spasmodic contractions. I use the word contracture in preference to Sauvage's "tonic spasms"—the two terms having the same meaning. This expression has for a long time been in use, especially by the French, who have taken it from *contractura*, which the Latins used synonymously with *contractio*; but the former means something more than the latter. Contraction of muscular tissue is very soon followed by relaxation and a considerable period of repose, while the period of repose is scarcely appreciable in contracture during its early existence, and is practically abolished in its advanced stage.

Contracture of the bladder may be transitory or permanent. It is transitory when its cause has existed but a short time and can be speedily removed, and permanent when this cause has existed for a long time—a year or years, for instance. The contracture may be general; i. e., may involve the whole of the muscular structure, or local, and affect only the bands of muscular tissue which act upon the vesico-urethral orifice. Con-

tracture of the bladder occurs alike in youth, middle life, and old age.

The frequency of this ailment is greater than it is generally supposed to be; often the trouble is not recognized until it has become irremediable; but, when it is discovered during the early period of its existence, it can frequently be soon remedied by general and local treatment.

CAUSES.—Among the many causes of cystitis followed by contracture of the bladder, may be mentioned: 1. Any marked deviation from the normal standard of quantity or quality of the urinary secretion; 2. Stone in the bladder; 3. Foreign bodies in the bladder; 4. Certain uterine displacements; 5. Papillomata of the female urethra; 6. Acute urethritis in the male; 7. Obstruction of the urethro-vesical orifice by a hypertrophied prostate; 8. Stricture of the urethra; 9. Chronic urethritis; 10. Disease and injuries of the nervous centers; 11. Anæsthesia by ether. To this catalogue of causes may be added, tumors of the bladder, too frequent and violently-performed catheterism, fæcal accumulation in the rectum, fissure of the anus, hæmorrhoids, etc.

1. Hysterical women and men with disturbed innervation frequently suffer from cystitis, and finally from vesical contracture, due to the long continuance of an abnormally abundant secretion of pale urine of very low specific gravity. The immediate effect of this unnatural flow of urine is rapid distention of the bladder, to which the organ is unaccustomed; here, then, is the first disturbing element. If this polyuria continue unchecked, even for a few weeks, the quantity of urine passed, at first large, soon diminishes with each act of micturition, but the desire to urinate is more urgent, the intervals shorter, and the act finally extremely painful from violent spasmodic contractions of the bladder. If the urine be then examined microscopically, it is found to contain a large amount of vesical epithelium, washed away, as it were, by a great flood. In point of fact, the mucous membrane has become water-logged, as it does from too frequent and abundant vesical irrigations. Thus, in a measure deprived of a part of its epithelium, the bladder

can no longer resist the irritating effect of the urine, becomes inflamed, loses in a greater measure its retentive power, and may soon be in a hopelessly contracted state.

The other extreme is seen in those cases in which the urine is of very high specific gravity, such as in many instances of saccharine diabetes. Here, also, cystitis occurs, and contracture is the outcome if the cystitis be not relieved. I do not mean to say that cystitis exists in every case of confirmed saccharine diabetes—every practitioner knows the contrary—but that it is of frequent occurrence in such cases, and that in these there may be a predisposing cause of which I know nothing.

I may be asked why, if urine of low specific gravity be an irritant, is urine of high specific gravity equally an irritant? I shall venture upon an explanation which I trust may be satisfactory. In the case of urine of very low specific gravity, the superficial stratum of epithelial cells, by an endosmotic process, *swell*, die, and are cast away; and in the case of urine of high specific gravity the epithelial cells, by an exosmotic process, *shrink*, die, and are cast away; in both cases leaving a denuded surface upon which the urine acts deleteriously.

Purulent urine from pyo-nephrosis often causes cystitis with inordinate vesical spasms. Highly acid urine is another well-known irritant to the vesical mucous membrane; and the same may be said of highly alkaline urine. Urine charged with uric acid, oxalate of lime, or the phosphates, creates a sufficiently great mechanical irritation to give rise to cystitis and contracture.

Urine rendered acrid by the habitual ingestion of some poisonous substance—opium, for instance—by the immoderate use of ardent spirits, new beer, some of the balsamics, turpentine, cantharides, etc., may be added to the exciting causes.

2, 3. The presence in the bladder of a urinary calculus, or of a foreign body, in a comparatively short time causes cystitis, often very painful and obstinate spasms, and finally permanent contracture, the stone or foreign body in some cases being firmly grasped by the convulsed bladder. Such are the cases that give much trouble and anxiety to lithotriptists, and that induce many surgeons to resort to lithotomy; but this spasmodic

action of the bladder can be brought under complete subjection by patient and gentle treatment for a few weeks, when it will be possible to extract the foreign body or to crush the stone.

4. Certain uterine displacements are not uncommon sources of vesical inflammation and spasm, by mere mechanical pressure and by encroachment upon the cavity of the bladder. I believe that this condition has long been fully recognized by gynaecologists. More than twenty years ago I saw, with the late Dr. George T. Elliot, a woman who was dying, and did soon die from the consequences of chronic cystitis with "tonic spasms" (contracture) of the bladder. The cystitis was caused by an anteverted uterus, which had become adherent in that abnormal position and could not be replaced.

5. I have had under observation six cases of papillomata in the female urethra, which had caused cystitis with extremely painful vesical spasms. One of these cases was a child about five years of age. I excised two papillomata, which had caused partial obstruction of the urethra and retention of urine accompanied and followed by painful spasms of the bladder, and in a short time all these troubles vanished.

In another case of six years' standing, in a lady of fifty years of age who could not retain her urine more than ten minutes, excision of the growths and a few months of local and general treatment restored the retentive power of the bladder to eight ounces. I heard from her ten years after this, and she reported herself well.

A lady of sixty-four, who is still under my care, had suffered for fifteen years from constant vesical irritation, due, as I ascertained on examination, to the presence of three urethral papillomata, which I excised, at the same time divulsing the urethra to the extent of admitting my index-finger. I found the bladder much contracted, indurated, and concentrically hypertrophied. Its capacity was diminished to half an ounce. In the last eight years I have not been able to bring up the retentive power of the bladder to more than four ounces, and I do not think it would be safe to undertake to do more than has already been accomplished. The patient is otherwise well. The details

of the last three cases need not be given. The fourth case was similar in result to the third; i. e., the capacity of the bladder could not be increased beyond four ounces. The fifth and sixth cases were cured.

6. Acute urethritis in the male sometimes gives rise to cystitis with spasms of such violence that if the urethra were as broad and short as in the female, the vesical mucous membrane would be extruded, as is the case with the rectal membrane in prolapsus ani. I once heard a patient say, in his agony, "Doctor, it seems to me as if my bladder will be forced out of my body." The man was young and robust and made a good recovery, but not until he had undergone a most active course of treatment for several months. Some of the most obstinate cases of chronic cystitis, with permanent contracture, sclerosis, concentric hypertrophy, and extremely diminished vesical capacity, have been the outcome of ordinary acute urethritis and have finally succumbed with pyelo-nephritis.

7. Prostatic obstruction, even for a short time unrelieved, causes a more or less obstinate cystitis, and almost always some hypertrophy and contracture of the muscular wall of the bladder. The first effect of obstructed urination from hypertrophy of the prostate is a series of frequent and violent contractions of the bladder, which is incessantly wrestling with the urethro-vesical obstacle to get rid of its fluid burden, and only a small quantity of urine is expelled at each contraction. The struggle between the bladder and the inexorable obstacle continues week after week and month after month until not a single drop of urine can escape. Hypertrophy of the muscular wall of the bladder has already taken place. The contractions then cease, and the bladder becomes over-distended with urine, which soon begins to dribble involuntarily from overflow. The violent contractions referred to above in the case of prostatic obstruction are caused, not by a little irritating urine, or by great floods which wash away the epithelium, but often by bland urine which has slowly and gradually accumulated in the bladder in spite of its efforts to expel it, has there stagnated, become alkaline, and caused inflammation of the enlarged lower fundus. I should

say parenthetically that the epithelium of old men's bladders, possibly from the presence of an increased amount of silicious substance, has a greater power of resistance against fluids than that of young subjects. It is known that catheterism and other operations are better tolerated by the urethræ and bladders of the aged. The contracted and hypertrophied bladders of the old are disposed to increase rather than to diminish in capacity, the latter condition, in my experience, being exceptional. One of the worst calamities that can befall an aged man, suffering from the consequences of prostatic hypertrophy, is contracture of the bladder with excessive diminution of its capacity; but fortunately this is rare, while hypertrophy of the bladder with distention is the general rule. From the fact that the urine, flowing even through a catheter, does not come out in a jet but rather slobbers, it is often said that the bladder is in an atonied and atrophied state. The truth is that there is anything but atony. There are in reality, "tonic spasms," hypertrophy of the muscular substance, and finally sclerosis of the connective tissue. I have yet to see a case of atony and atrophy of the bladder from prostatic hypertrophy.

8. Neglected urethral stricture causes cystitis by first giving rise to retention of urine. The bladder, as in the case of obstruction from enlargement of the prostate, may be dilated, and at the same time contracted and hypertrophied, or its capacity may be extremely diminished. In the latter case, even after relief of the stricture, all interference is often unavailing; but ordinarily, when the bladder is dilated while contracted and hypertrophied, its condition can be greatly improved after the stricture has been relieved.

9. Chronic urethritis, when it extends to the prostatic urethra and urethro-vesical orifice, causes a degree of contracture of the neck of the bladder which is followed by stagnation of urine, inflammation of the lower fundus, and finally general contracture of the bladder. This condition, so well described by Dr. Mercier, is very often overlooked or is mistaken for prostatic hypertrophy.

10. Certain diseases and injuries of the nervous centers are followed by retention of urine, said to be due to paralysis of the

bladder. If the bladder be paralyzed, true incontinence and not retention of urine should occur. It has been shown that lesions of the nervous centers which disturb the bladder-functions do not cause paralysis of that viscus, but contracture of its neck and consequent retention of urine. In a number of autopsies upon cases of fracture of the spine with paraplegia, I have found the bladder inflamed, hypertrophied and dilated; and these lesions have been due to stagnation of urine arising from urethrovésical obstruction caused by contracture. I might dwell at great length upon this topic, but what I have said will suffice for the present purpose.

11. One of the last of the exciting causes enumerated above is given as a warning to surgeons who make free use of ether as an anæsthetic. In thirty cases out of one hundred which I have operated upon for hæmorrhoids, I have seen ill results upon the bladder which were attributable to the remote effects of this anæsthetic. I have noticed the same results after operations performed in other parts of the body—amputations of limbs, excisions of tumors, etc.,—which necessitated the use of a considerable amount of ether to prolong the period of anæsthesia. The anæsthetic acts in two ways: first, upon the kidneys, by which it is largely eliminated, giving rise to congestion and oliguria, then to polyuria; second, the urine containing ether is irritating, but as the patient remains for some hours considerably under the influence of the anæsthetic, even after he has regained consciousness, he experiences no urgency to empty his bladder, which finally becomes greatly overdistended. The time at length comes when he should urinate, but he finds it impossible. The catheter is resorted to, and its use becomes compulsory every few hours for many days. I have been obliged to use the catheter in some cases for a month or more after the prolonged administration of ether. The retention of urine, in such cases, is due to “tonic spasm” (contracture) of the neck of the bladder. The overdistention itself has caused a more or less obstinate cystitis, which has often ended in permanent general contracture and hypertrophy of the bladder.

To avoid these sad results, I now endeavor to prevent the

bladder from becoming overdistended, by asking the patient to urinate before the operation, and again as soon as he regains consciousness, and, if he fail, I immediately introduce the catheter. These simple injunctions and means often avert a troublesome attack of cystitis.

The foregoing remarks indicate to some extent the morbid changes that give rise to and are caused by cystitis and vesical contracture. Time and space will not permit me to enter more fully into pathological considerations.

SYMPTOMS.—Cystitis, being the principal factor in the production of contracture, is always present, and the contracture intensifies its symptoms. For instance, in the earlier stage of contracture the incessant spasms give rise to the greatest distress before, during, and after each act of urination, which, in some cases, occurs as often as every quarter of an hour. The urine is always turbid and purulent, and sometimes bloody. Later on, the urine ceases to be expelled in a jet, but slobbers out, and there is pain in the urethral canal and in the glans penis, which so closely resembles the sensation experienced when there is stone in the bladder that the surgeon can scarcely resist the impulse to sound for stone.

When contracture begins in the urethro-vesical fibers, a barrier is opposed to the evacuation of the bladder. The urine stagnates in the lower fundus, to increase the existing mischief, if it be not drawn off artificially.

Patients thus attacked suffer from more or less accumulation of fæces in the rectum or from hæmorrhoids, from lumbar and hypogastric pains, and from sciatic and anterior crural neuroses.

DIAGNOSIS.—The diagnostic signs have been made manifest by what precedes and need no further elucidation.

GENERAL TREATMENT.—The general treatment of vesical contracture should consist in the administration of remedies which tend to mitigate pain, by their action upon the innervation of the affected parts, and also by their power of modifying the urinary secretion. In the first instance opium may, with great benefit, be given in a few free doses (not less than forty minims of the tincture) that will make a decided impres-

sion upon the nervous and circulatory systems; but small doses, long continued, should be avoided as positively harmful (except in polyuria), for opium so given diminishes the urinary secretion and renders it acrid and irritating. Another valuable agent is belladonna; but this drug can not be given for more than three or four days, on account of its very unpleasant toxic effects, even when not more than a quarter of a grain is administered three or four times daily. It is generally much better and longer tolerated when given in combination with opium. In a number of cases I have had good results with hyoscyamus extract, three or four grains per day; also hyoscyamin, one two-hundredth of a grain three times daily in the form of tablets, but this salt is not tolerated more than three or four days. I believe that Dr. Squibb has some objections to the oral administration of hyoscyamin, owing to the extreme delicacy of this salt and to its liability to chemical destruction by the gastric juices. He therefore suggests its hypodermic use. I have not, so far, found it to fail when given as I have mentioned.

In case of polyuria opium has its value, but I have never used it for any great length of time in a given case, for fear of the habit which is so likely to grow upon those who begin to take opiates in small doses by mouth or hypodermically. I have, therefore, in preference, resorted to gallic acid in doses of fifteen and twenty grains, and like its effect. Ergot has a similarly good effect in doses of twenty minims of the fluid extract three times daily.

When lithuria exists, it should receive its appropriate medicinal and hygienic treatment. I have often combined hyoscyamus or belladonna with citrate of soda in such cases and have given this mixture largely diluted, for five or six days, with much benefit.

In certain cases where iron is indicated, I order a mixture of equal parts of tincture of the chloride of iron, tincture of cantharides, and fluid extract of ergot, fifteen drops, in a wine-glass of water, three times daily.

Quinine, in small doses, is harmful. I rarely use it in doses of less than ten grains.

Preparations of strychnine or nux vomica are particularly injurious, especially when long continued. I need scarcely say why. They are too much used, or I should say abused, in affections of the urinary organs.

In cases complicated with painful neuroses, I have prescribed, with good effect, salicine in doses of fifteen grains three and four times daily.

No good result can ever be obtained unless the rectum be kept empty.

LOCAL TREATMENT.—In cases of acute cystitis with transitory contracture, more reliance is to be placed upon general than upon local treatment. In young, robust subjects, as the one mentioned in the beginning of these notes, after abundant catharsis, a few large doses of opium, and the free use of diluents, the very great distress will subside; but local depletion will be necessary, and half a dozen leeches may with advantage be applied to the hypogastric, and as many to the perineal region. This should be followed by a large poultice, sprinkled with laudanum, to the hypogastrium, to be renewed every few hours. The action of the opium should be closely watched.

Lately, in a few cases, I have thrown into the bladder, after emptying it, a small quantity of four per centum cocaine solution. Several times a patient fancied that it had relieved his local pain for two hours, but afterward it appeared to him to be inert. I have injected such a solution into the prostatic sinus with only temporary benefit, and have finally abandoned it simply because its good effect was so transitory, and because I believed that its frequent and more heroic use would cause mischief.

Ordinary irrigations of the bladder are clearly contra-indicated in the acute stage of cystitis with "tonic spasms" (contracture).

When the cystitis is subacute, or already chronic, the accompanying contracture can be cured, if it have not become permanent and is not accompanied with sclerosis of the connective tissue and diminished vesical capacity. The local treatment should be directed to the relief of the cystitis and of the contracture at the same time, and should consist in slow, gradual,

and progressive hydraulic dilatation of the bladder, so successfully employed by Civiale and by others of his time, and so little used at present. This excellent method of treatment has been set aside by many who have been allured by the apparently more promising and quicker method of sudden dilatation with the aid of anæsthesia. This latter method is always unsafe, often dangerous, and seldom successful. The slight benefit which it exceptionally confers is of short duration, and the old symptoms soon return in a more aggravated form than before. Some surgeons even advocate sudden distention of the bladder with a strong solution of nitrate of silver. One of the most hopeless cases I have ever seen was that of a man whose bladder had been rapidly distended with a solution of nitrate of silver, thirty grains to the ounce. I have seen many cases of vesical contracture rendered incurable by the incautious use of nitrate of silver. In cystitis, the nitrate of silver is unquestionably a valuable therapeutic agent, when used at the proper time and in solutions of suitable strength, but very strong solutions in large quantity not only fail to relieve cystitis, but do mischief which can never be repaired.

To return to gradual dilatation of the bladder, let me say that this simple mode of treatment, which requires time, patience, caution, and gentleness, can do no harm if not successful, and can be applied tentatively to any case of cystitis with contracture. In a few days the surgeon knows, to some extent, how much good may be expected from the treatment. At the third or fourth sitting he knows whether the bladder be susceptible of dilatation or not, and perhaps to what degree. If, at the first sitting, the bladder can hold only one ounce of water, rendered denser by the addition of some neutral salt, and at the next sitting half an ounce more can be thrown in without exciting too much pain or any considerable hæmorrhage, and if as much gain can be made every third day, the operator may conclude that there is a fair prospect of speedy relief and perhaps of cure.

After the bladder has been dilated to the extent that it will contain at least eight ounces of fluid without bleeding, and will

retain the same amount of urine, if then the urine be still purulent, the nitrate of silver solution will be of great advantage. In these circumstances I begin with very weak solutions, one tenth of a grain to the ounce, gradually increasing the strength of the solution to one grain to the ounce, seldom to two grains to the ounce of tepid water, throwing in three or four ounces at a time, and repeating the injection only once every four or five days. I have thus obtained the very best results. When cystitis and contracture have been caused by a stone or a foreign body, and lithotripsy or the extraction of the foreign body has been effected, it is absolutely necessary that the most thorough after-treatment be resorted to. Neglect of the bladder after lithotripsy is fatal to this organ, and the recurrence of stone is to be looked for; yet how seldom any attention is paid to the bladder after lithotomy or lithotripsy!

Very soon after either operation, the bladder should be daily emptied and irrigated, and the process of gradual dilatation begun and carried to the proper degree. The same precaution should be taken after any of the modes of treatment for narrow urethral strictures of long standing, and also in cases of contracture from other causes.

Early attention to the cystitis in cases of enlarged prostate will generally prevent the bladder from diminishing in size, but this attention must be unremitting. In some cases I have been obliged to irrigate the bladder once and twice daily for a long time—two and three years—beginning with an ounce or two, and gradually increasing the amount of fluid thrown in each time, to ten and twelve ounces. At first the gain is scarcely perceptible. In a week's time it may not exceed half a drachm, but afterward it is greater, and when the maximum has been attained it must be maintained. The largest quantity, however, need then be used but once every four or five days.

When the bladder is already large, it is necessary only to keep it clean by a moderate irrigation once a day.

In addition to the biborate of soda and essence of winter-green, I have used solutions of boric acid and of acetate of lead, the latter when there is phosphatic gravel.

NOTE ON TWO PECULIAR CONDITIONS OF THE MAMMARY GLANDS.

By SIMEON TUCKER CLARK, M. D., of Niagara County.

Read by title, November 17, 1885.

CASE I.—Mrs. L., American, thirty years of age, married, had been thrice pregnant, aborting twice before quickening and without secretion of milk. The third pregnancy was completed at term, and, on the third day after the delivery, the medical attendant found his patient in possession of three perfectly well-developed mammae. The third breast was in no sense a double development of either, but was supernumerary, and situated a little below and to the left of that which ordinarily would have been called the left mamma, but of equal size, and as distinct from it as the left from the right gland.

The lacteal secretion was fully established in the three glands, and the attending physician advised that all should be used in nursing. The mother, however, greatly distressed concerning this departure from the normal standard, and anxious to dispense with the use of the supernumerary organ, requested a consultation, and I was selected to see her with the attending physician. The matter being fully discussed, it was decided to closely strap the unnecessary gland with adhesive plaster, and remove the milk twice daily for three days. No further treatment was required, as the secretion ceased.

The gland, which was so situated as to receive the pressure of the corset, did not attract the attention of the patient until the establishment of lactation after delivery. The secretion appeared in each of the three breasts at the same time, and the third nipple equalled in size the other two. The "breasts" were small previous to lactation, and, after the disappearance of the milk from the supernumerary gland, but little remained to mark its site except the nipple, but no examination was made to determine the continuance of gland structure. The patient was below the ordinary stature, and of spare habit.

From my observation of the case, I have no doubt of the presence of a true supernumerary gland, and that in the event of future pregnancies it will again secrete milk. I have only to add that nursing was continued from the normally situated glands.

CASE II.—Mrs. S., a widow, about forty-nine years of age, began to be irregular in the menstrual function at about her forty-fifth year. During the first two years of that interval of time I had seen her occasionally in relation to a rather copious uterine hæmorrhage, which, although occurring at irregular intervals, was probably menstrual. She was hysterical, notably so on the occasions of the menorrhagia, but after the cessation of the menstrual flow the hysterical manifestations diminished. Almost a year after the last menstrual period I was called to see her on account of an enlargement of the left breast, which I found hot, swollen, and painful. Manual pressure over the gland yielded a small quantity of milk, which quantity was further increased by means of a breast-pump to about half a tea-cupful, with complete relief from the pain, and with a rapid subsidence of the heat and tumefaction. This condition occurred four times with perfect regularity every twenty-eighth day, and then for three times at the same interval of twenty-eight days, bleeding from the nipple occurred, but it was unattended with heat or swelling. Since the third attack of bleeding from the nipple there has been no occurrence of menstruation, or any trouble connected with the mammæ. At the time of the secretion of milk and escape of blood from the nipple above noted, hysterical symptoms were as marked as at her regular menstrual periods.

Though the escape of blood from the nipple led me to fear the development of malignant disease, I now regard it as an instance of vicarious menstruation, for a year has elapsed since the last appearance of the bleeding, and I find the mammæ of a wrinkled appearance, so common in old women, and there are no lumps or nodules to indicate the presence of a neoplasm. There is no cachexia to indicate the existence of malignant disease elsewhere, but, on the contrary, the patient's condition has steadily improved, so that now she enjoys better health than at any time preceding the menopause.

REMOVAL OF THE UTERUS FOR CANCEROUS DISEASE.

By THOMAS H. ALLEN, M. D., of New York County.

Read by title, November 20, 1885.

ANNE CURRY, Ireland, aged fifty; widow; mother; family history, negative.

She was admitted June 19, 1885, to the New York Charity Hospital, and immediately transferred to the wards for the treatment of diseases of women. Eighteen months ago her "periods" began again, after having been absent six years. She bled at that time at varying short intervals during nine months, when the flow finally became thin, yellow, and muco-purulent. The discharge was not specially offensive, and there was not much suffering, although she remembers a tenderness in the right iliac region, and, at times, some pain in the back.

There was tenderness in the right side; also much enlargement of the uterus, which was painful on pressure, and bled profusely when disturbed by the finger. A subsequent examination by bimanual palpation caused thin matter to spurt from the vagina, and, upon re-inserting the finger into the open ulcerating os uteri, it likewise bled freely. The discharge had now become very offensive, and in its character varied from bloody to muco-purulent. The patient had lost much flesh during the last six months, and was withal quite anæmic. The diagnosis agreed upon was as follows:

Epithelioma of the neck of the womb, and enlargement of its body from subinvolution; there was also evidence of an old cellulitis, which had involved the right uterine appendage.

June 26th.—Carbolized vaginal douches several times a day, and general tonic remedies with stimulants.

June 29th.—The patient complained of chilliness, for which

ten grains of quinine were ordered, three times a day. No other additional symptoms; the temperature was normal, and there were less local pain and tenderness.

July 6th.—There was a recurrence of vomiting, pain, and of the discharge, which had previously diminished. This condition of affairs continued with little change until August 16th, when she desired the question of an operation to be considered.

August 17th.—She was again placed on the table, and the examination revealed the fact that the cancerous process was extending toward the utero-vaginal junction, without an apparent involvement of the parametrium; the old cellulitis, however, opposed the uterus against the moderate traction of the tenaculum. The enlargement of the body of the womb I was inclined to attribute as much to a possible subinvolution of a past pregnancy as to the congestion and inflammation excited by the epithelioma.

September 1st.—It was decided to remove the uterus, ovaries, and lateral uterine ligaments. The patient was accordingly anæsthetized by Squibb's ether, and an incision was made through the linea alba, from a point one inch below the umbilicus to within an inch of the symphysis pubis, down to the peritonæum—the latter having been divided on a director. The omentum and intestines were lifted up, while covered with warm carbolized cloths, and held in proper position by my assistant. The uterus, now brought into view, was as large as an infant's head, and connected to the intestines by several adhesions, three or four inches in length. I then severed the adhesions at their uterine connection, quite close to their intestinal junction. After having lifted up the posterior fold of the broad ligaments I found the ovarian arteries, as they pass to the hilus of the ovary, and divided them between my distal and proximal ligatures. I did this to prevent bleeding directly or indirectly through the uterine branch of the internal iliac.

I had intended at this point of the operation to apply a Storer's clamp, as low down on the uterus as possible, and then to amputate that organ, that I might have more room to reach the neck of the womb; but this I abandoned, on the ground of a possible disappointment in the seeming advantages, inasmuch as the uterine neck was very much enlarged. The uterus was now elevated as much as possible, and held there until I reached the uterine arteries in their ascent in the folds of the broad ligament; hav-

ing tied them, I carefully separated them from the uterine tissue, beyond the point at which they join the sides of the uterine neck in their descent from the anterior trunk of the internal iliac artery, and tied them again on the proximal side, to guard against secondary hæmorrhage. I then cut the utero-vaginal attachments, and removed the uterus, the ovaries, and broad ligaments, *en masse*. I next sewed the edges of the vagina together with carbolized silk ligatures, leaving a prepared chicken-bone drainage-tube inserted in the center of the vagina between two sutures. The operation was completed at four o'clock, having lasted a little over one hour.

During the operation, carbolized spray was kept playing upon the wounded surfaces, and the air of the amphitheatre was likewise well carbolized. The pelvic cavity, besides, was washed with the solution of mercury bichloride. The abdominal wound was united with six silver sutures placed three quarters of an inch apart, each one of which was inserted three quarters of an inch from the margin externally, and caused to emerge half an inch from the margin internally. Superficial continuous sutures of catgut were also applied to coaptate the edges, and the abdomen was covered with borated cotton.

At the completion of the operation, the patient's pulse reached 120. Twenty minims of camphorated ether were injected subcutaneously. The pulse beat diminished to 110, and was strong and regular; hot bottles were applied to the feet; in half an hour the patient opened her eyes, and shook her head when asked if she had pain. Hypodermatic injection of morphine was also administered. At one o'clock in the morning of the next day she began to be weak; stimulants were resorted to, but at four o'clock, or shortly thereafter, she died.

Previous to the performance of this most formidable operation, my experience in the operative treatment of cancer of the womb had been limited to three cases, one of which came under my notice in 1877, and consisted in the removal of the neck of the womb. I saw this case a year afterward, and there was no return of the disease. My second case was also one of epithelioma, and though I removed the neck by making a conical excision, after the manner of Schroeder's operation, I failed to re-

move all the diseased part. I operated on my third case in Charity Hospital, by removing the neck with a wire loop heated to redness. This healed kindly, and my patient was discharged cured. I did not see her again, and therefore can make no positive statements as to whether or not her cure was complete.

The staff of our Charity Hospital labor under the disadvantage of being unable to keep track of their patients, who frequently sacrifice their identity. If they get well, they go out, too frequently to relapse into a former life of dissipation. Then they may be cared for later, in a different ward, under a different name, or they may find their way to another hospital, with an incomplete or unsatisfactory medical history.

I omitted to state that Dr. A. Brinkman, of Brooklyn, took with him some sections of the mass I removed, for a microscopic examination. In a letter received from him last month, he stated that the bulk of it was an intramural fibroid tumor, and that the disease affecting the cervix was an epithelioma. It is probable, I think, that the adhesions were due to an old perimetritis, and that they were lengthened out by the physiological movement of the intestine.

This case adds one more to the high mortality of an operation which, in the hands of Freud himself, who devised, and in a measure popularized it, at least for a time, rose as high as sixty-six per cent., and, in the few cases of survival, gained, with scarcely an exception, nothing more than a speedy recurrence of the disease.¹ Still, in the face of all this, I must confess to a belief in its justifiability as an operation in exceptional cases, and also to a hope that better results may yet follow, when it shall be limited to those cases in which Schroeder's operation, by wedge-shaped excision of the cervix, as high up as the internal os uteri, or amputation of the cervix, or Santer's operation of vaginal hysterectomy, is not adequate for the removal of the diseased tissue. Again, in the event of the non-existence of disease of the parametrium, Freud's operation, by all odds the gravest of all, is as justifiable as any other, if the indications

¹ See "Gynecological Transactions," 1884. Art., "The Limitation of Vaginal Hysterectomy." Paul F. Mundé.

point to diseased portions of the uterus incapable of removal by any of the other operations. The whole question, it seems to me, depends upon whether or not cancer is a local disease. The weight of authority, while almost equally divided, inclines to its being a local disease primarily, destined, however, soon to become general. Hence an operation to be of the most benefit should be done early.

In a discussion before the London Pathological Society, in March, 1874, quoted by Dr. Galliard Thomas, in his "Diseases of Women," it is stated that the joint opinion of Messrs. De Morgan, Hutchinson, Moxon, Arnot, and others, was that cancer was the local manifestation of a blood state, while Sir James Paget, Sir William Jenner, Dr. Greenhow, and others, favored the view of its being originally a local affection. "So equally," says Dr. Thomas, "was the society divided in opinion, that, in point of numbers, the constitutionalists almost equaled the localists."

It is beyond the scope of my paper to enter the broad field of pathology of malignant disease; but, from my reading of the subject lately, I shall rest with the statement that it is not yet decided positively whether its origin is secondary to a blood state, whose local manifestation is cancer, or that cancer is the disease *per se*, and the blood state secondary to it. I find an equal difference of opinion in regard to the way the disease takes place among those pathologists who are the peers of one another, such as M. Robin, Virchow, Remak, Waldeyer, Billroth, Thiersch, Koster, Classen, and others, the difference being as to whether the cancer is evolved from the connective tissue corpuscle (Virchow), or from pre-existing epithelium cells (Thiersch and Waldeyer), or from the endothelium of the lymphatics by proliferation (Koster), or from the white blood-corpuscles (Classen), which Cohnheim demonstrated were susceptible of migration from the blood-vessels. The theory of Thiersch and Waldeyer has the greatest support, including that of Billroth.

In view of the doubt and uncertainty of the pathology of cancer, I am compelled to consider the statistics of operations performed for its cure. Hippocrates, in his "De Morbis Mu-

lierum," pronounced it incurable. This was more than two thousand years ago, and yet it still baffles our remedies, discourages our surgeons, and kills its hundreds of thousands.

Of all the cases of cancer, 23 per cent. occur in uterus and breast, the proportion being 18·5 per cent. in the former, and 4·3 per cent. in the latter (Virchow).

The disease, if allowed to run its course, terminates in death in fifteen months, according to West. Lebert gives an average of sixteen months, while Sir James Y. Simpson says, "Patients usually die from two to two and one half years after the detection of the disease." I have not kept a record of the cases of cancer that I have seen and treated without operation. I should think that six months were an average, as the disease, when first seen, has usually been in existence some time; for example: I saw a case of epithelioma in September, and advised a removal by hysterectomy, but the patient feared the operation. Her disease did not involve the vagina, yet she died this month. Had an operation been performed upon her, it is probable that she would have lived for years.

In an interesting monograph by Dr. Paul F. Mundé, in the "Gynecological Transactions" of 1884, the statistics of operation for the removal of cancer by the various methods of operating are given. I shall allude to them only briefly. Of the one hundred and twenty-nine cases of cancer operated upon during eight years, more than twenty-one per cent. remained well two years after the operation. It is also stated that the disease returned in four of these as late as two and a half years. Yet, twenty-four per cent. remained well after this last mentioned period. When we restrict the operation to amputation of the cervix, or to hysterectomy, the percentage is still higher.

The points I have sought to bring out before the Association are :

1. Whether or not cancer of the womb be a local disease, statistics justify its removal by operation.

2. The opening of the abdomen is not specially hazardous to life, as the statistics of Baum state that, of 5,153 ovariectomies performed in Europe and America, 3,651 recovered.

The operation of gastrotomy for removal of the womb for fibroid tumor has yielded 31.82 per cent. of recoveries. This I give on the authority of Pean, as cited by Thomas ("Diseases of Women").

3. Removal of cancerous uterus by laparotomy is justifiable when no other operation can be performed, and when the disease, as yet limited to the uterus, has not invaded the blood.

HÆMORRHAGE FROM THE URETHRA IN A CASE
OF HYPERTROPHIED PROSTATE WITH THE
RETENTION OF URINE, FOR THE RELIEF
OF WHICH FORCED CATHETERISM
HAD BEEN EMPLOYED.

By WILLIAM LINCOLN ALLEN, M. D., of Rensselaer County.

Read by title, November 20, 1885.

I DESIRE to present for the consideration of the Association a few points of interest connected with the following case, which I have taken from my note-book.

June 30, 1885.—Mr. J. M. R., sixty years of age, of excellent family history, his father having died at the age of ninety, and his mother at seventy-seven, of pneumonia. The patient gives no history of venereal disease. In early manhood he had suffered from pneumonia, some intestinal disturbance, and malarial fever. He was otherwise well until the year 1875, when he first experienced a burning sensation during micturition. In 1877 he had a sudden retention of urine, and attacks of retention recurred every two or three months.

An irregular practitioner, who was called to assist Mr. R. in his first attack of retention, used undue force with a common elastic catheter armed with a stiletto; this was followed by a free urethral hæmorrhage, and had given great pain to the patient. The hæmorrhage recurred at longer or shorter intervals for a period of eight years. The patient himself, in the mean time, had resorted to the use of a small elastic catheter, and latterly had recourse to the instrument five and six times every day. In 1884 there was a marked infiltration of the scrotum, with a bubo in the left groin. The patient meanwhile had gone the rounds of sundry charlatans, who gave as many absurd opinions of the case, such as hæmorrhage from the kidneys, ruptured blood-vessel at the neck of the

bladder, blood disease, kidney disease, hernia, and cancer of the bladder, etc., etc.

On the 24th of June, 1885, Dr. C. S. Allen was summoned in haste to the bedside of the patient, who had attempted in vain to relieve himself of retention of urine, from which he was suffering great pain. The doctor experienced great difficulty in introducing the catheter, but after a while succeeded with a No. 8 silver instrument. This catheterism was followed by urethral fever. Afterward the bladder was so irritable that half an ounce of urine caused great distress. The urine at this time was black with blood; the doctor estimated the quantity of blood at fifty per centum. The urine was also highly ammoniacal and extremely fetid. A warm poultice was applied to the scrotum, which was in a state of inflammation. Stimulants and anodynes were then administered. The patient had a constant desire to urinate, which was not relieved by his straining efforts, and the change of his position to his hands and knees, when he would try in vain to force out the few remaining drops with extreme strangury. He was anæmic from the frequent hæmorrhages, and emaciated, having fallen from the weight of one hundred and forty-six pounds to one hundred and thirty-five pounds. His muscles too were soft and flabby, and even walking across his chamber prostrated him. Appetite capricious, bowels costive, and sleep disturbed by the constant calls to urinate completed the picture of his misery.

Dr. C. S. Allen then kindly associated me with himself in the case. Quinine was prescribed in three-grain doses four times daily, and an anodyne pill of ipecac, opium, and camphor. Cathartics and a change of diet were likewise enjoined. From July 1, 1885, the catheter was employed twice each day; before that date it was used with greater frequency. The instrument was for a time retained in the bladder, but this was abandoned on July 10th. The urine was then of brown color, of a specific gravity of 1023, of alkaline reaction, and contained one quarter albumen. On standing it deposited some blood, urates, and bladder epithelium. At this date we began vesical irrigations twice daily. At first the injections were medicated with acetate of lead, but this was discontinued after a few times. Tannic acid and Squibb's fluid extract of ergot were used alternately for three days. Urine pale straw color, alkaline, specific gravity 1018, one sixth albumen, blood corpuscles,

and bladder epithelium. Dr. C. S. Allen advised irrigations of bicarbonate of soda solution with a little glycerine. From this time he began to improve. A No. 9 silver catheter was then used. The bladder became less irritable and the quantity of each injection was increased. No stone was detected, on careful exploration of the bladder, although he passed some phosphatic sand. Since the exhibition of the ergot the hæmorrhage has markedly decreased. The patient has gained flesh, is generally better, and makes a good stream of urine without pain. The urine is still tinged with blood, and contains some shreds and a few clots. The swelling of the scrotum has rapidly decreased.

On July 14th a No. 11 (English) sound was introduced with but little difficulty. He sleeps well, eats well, his bowels are open, but the urine, which he can hold four hours without trouble, still contains some blood. The bladder is now irrigated once a day and the sound introduced every second day.

August 3d.—Since the last date there has been a succession of more or less severe hæmorrhages, which we were able to locate in the prostatic portion of the urethra (the seat probably of the original false passage), for after clearing the bladder of the bloody urine it contained, and then throwing in pure warm water, it passed out perfectly clear. There being still some inconvenience from the stinging sensation in the prostatic portion of the urethra, injections containing ergot, tannic acid, nitrate of silver (two grains to the ounce), and saturated solution of alum, were used at different times, but were not tolerated, induced some urethritis, and were consequently discontinued. Then, from August 29th, soluble bougies, containing each half a grain of sulphate of zinc, a quarter of a grain of carbolic acid, and a grain each of extracts of hydrastis and belladonna, were introduced nightly into the urethra as far as the seat of pain in the prostatic sinus. There has been no hæmorrhage since the beginning of this treatment except once, when, after lifting a heavy weight, he passed about a drachm of florid blood. He now (November, 1885) weighs one hundred and fifty-four pounds, eats and sleeps well, the urine is normal in appearance and is passed without the least uneasiness. He is attending to his affairs, and is able to walk great distances without inconvenience.

The points in this case which particularly interest me are:

1. That the patient at the age of about fifty-two was already

suffering from enlargement of the prostate; at least, the trouble was in its incipiency, and probably after exposure to cold he was attacked with acute engorgement of the prostate, and the neck of the bladder was suddenly closed. Hence the retention of urine which occurred in 1877, and which has been the indirect cause of all his subsequent distress. Had he then received proper treatment there would have been no false passage, and therefore no hæmorrhages. 2. The forced catheterism (an operation always to be deprecated) produced a false passage in the congested tissues, which yielded a copious flow of blood, and each time thereafter the catheter was introduced there occurred a fresh hæmorrhage. The walls of the false passage being covered with granulation tissue, it is not strange that clumsy catheterism for eight years should have provoked hæmorrhage. 3. Though there is prostatic enlargement, there is no obstruction to the flow of urine; this is probably owing to the fact that the third lobe is intact. 4. The fact that the cystitis consequent upon the attacks of retention of urine has so rapidly yielded to treatment goes far toward sustaining this view. 5. I believe that the local treatment by the soluble bougies and the use of the sound has caused the false passage to heal. This, and this only, explains the cessation of the hæmorrhage.

Whenever a regular practitioner is called to see a patient who is in a dangerous condition, and at the same time is attended by an irregular, he should go without the least hesitation, but always with the express understanding that he is not to meet or consult with the irregular, and that he is to take sole and entire charge of the patient. If, in such a case, a regular practitioner be sent for, it is because the irregular in attendance is at his wit's end, and has failed, and is no longer of any use either to the patient or to the new doctor who has been called, and should be dismissed. The patient wants relief, and has a right to demand it, but he has no right to thrust upon a regular physician one with whom he can not work in harmony for the good of the sufferer. The physician has the right to say who shall or shall not be associated with him in the case. This seems to be the only course open to the regular profession.

REPORT OF A CASE OF BILIARY CALCULI, DIFFUSED HEPATITIS, AND HYDROTHORAX.

By CHARLES S. ALLEN, M. D., of Rensselaer County.

Read by title, November 20, 1885.

ON September 11, 1884, I was summoned to see Professor —, a principal of the village public school, who, while just beginning the duties of the day, was suddenly seized with an excruciating pain in the gastro-umbilical region, which compelled him to hurriedly seek his home. His mother, he informed me, had during her life been subject to like attacks, during one of which she died; of his father's medical history he knew nothing. In his seventeenth year he himself had a serious illness, which was diagnosed as enteritis, the pain of which was located in the region of the umbilicus. He recovered, under the care of Dr. Colvin, Sr., but had occasionally reminders of his old trouble in the way of pain referable to this same region. He said that "with the exception of the old-fashioned bilious attacks, which were always relieved by vomiting, his average health was good." These, however, he never had previous to the original trouble.

Just about a year before my last attendance he had an attack, something like the present, while on a visit to Saratoga, from which he did not fully rally until after the lapse of three weeks. His general health, too, since then seemed to have undergone a change for the worse. In August, 1884, during his sojourn at Ocean Grove, New Jersey, he was annoyed by frequent attacks of nausea, for the relief of which he sought no medical advice. Having returned home six days after the opening of his school for the term, he was again seized with a pain of the character described. He was then fifty-two years of age, and two hundred and twenty pounds in weight. On my arrival at that time I gave him a diagnosis of "bilious colic," and administered

one half grain sulph. morphia subcutaneously, which relieved him of his intense suffering in about twenty minutes. I also gave him a large enema, applied fomentations to the abdomen, advised a brisk cathartic, and finally left him in a comparatively comfortable condition. On my next visit he complained of tenderness of the abdomen, and his bowels had not yet moved. I therefore repeated the enema several times for three days before any effect was produced. During this period an icteric tinge was noticeable in the face but not in the conjunctivæ. The pulse and temperature were normal.

He improved so much within two weeks as to be able to sit up and read the news of the day. I had begun to entertain sanguine hopes of his recovery, when one night I received a hasty summons. I found him almost prostrated by violent vomiting, which continued at greater or less intervals for two weeks, despite my best efforts for its control. Congress water just off the ice answered my purpose much better than belladonna, subnitr. bismuth, and the usual remedies of that class. He was able to retain a large gobletful of the water, just as he always had done in previous attacks. His hiccough, which was very distressing, was only temporarily controlled by tobacco-smoking—a habit of his which I allowed him under the circumstances to indulge. There was more or less mitigation of these distressing symptoms—they were not, indeed, inveterate—they might be absent for a day, perhaps for a whole week. The food I knew to be retained for as long as two days at a time. I could detect no symptoms of peritonitis, but after about six weeks of this kind of experience I discovered in the umbilical region a circumscribed enlargement, recognizable through the walls of the abdomen. It was about the size of a man's fist, and occupied the seat of the pain.

The patient's brother, a physician, was now called in, and Dr. C. H. Burbeck, of Troy, was added to our council; the diagnosis was enlargement of the liver, with a wavering as to its true character. Dr. Albert Van De Veer, of Albany, member of another and later council, pronounced the mass carcinomatous, and maintained that there was also carcinoma of the stomach. An after examination, a week or ten days later, by the last-named gentleman, brought with it no change of views.

I have omitted one important point, to wit, that about two

weeks before I first called counsel, the patient's left arm became cedematous—markedly white and easily pitted on pressure. There was also a profuse lachrymation of the left eye, which had an inflamed appearance. The lower extremities, however, did not become swollen until the last part of the patient's illness. There was an embarrassed action of the heart, which could not be satisfactorily explained, and the occasionally intermittent pulse boded no good. The urine was normal, and only became ammoniacal toward the last. He had a slight cough, with expectorations of a slightly sanguineous mucus. His mind was clear until within twenty-four hours of his death, which occurred nearly two months after leaving his school. He died comatose.

Necropsy twenty-four hours after death. Stomach showed no carcinoma, only a dark-green mucoid fluid like the vomited matter during life. The small intestines, pancreas, and mesentery were agglutinated, constituting a round substance to which the under surface of the stomach adhered. The liver was enlarged and adhered to the right side; upon incising this organ a number of abscesses were found, some of which had discharged. Upon the surface of this organ was seen a large sac of serum. The gall-bladder contained a number of calculi of various sizes, some of which had become so imbedded as to preclude the possibility of a dislodgment during life. The heart was normal, although the pericardium and left thorax were filled with serum. The spleen was of normal size, with the usual appearances, except that it contained a number of chalky deposits. The right kidney only deviated from the standard, being large and pale—its supra-renal capsule adhered closely to it, and was slightly hardened.

PELVIC HÆMATOCELE: ITS DIAGNOSIS AND TREATMENT.

By WILLIAM WOTKYNs SEYMOUR, M. D., of Rensselaer County.

Read by title, November 20, 1885.

IN presenting a paper on this subject for your consideration, I will say, in justification, that the views presented are the result of the twenty-five cases observed by me in my own and in my father's private and consultation practice, and of the perusal of recent works in this field by various authors. In the journals comparatively little is said regarding this condition, for in the twenty volumes of the "American Journal of Obstetrics" there are only five articles, and they are all reviews of foreign work by Fritsch, Bernutz, Schroeder, Zweifel, and Duvelius.

To begin with, pelvic hæmatocele is not a disease, but a condition, or symptom of several pathological conditions. It has been described under the various designations of peri, retro-uterine, pelvic, uterine and intra and subperitonæal hæmatocele, or of the same prefixes with hæmatoma. The primary idea of the designation is a tumor within the pelvic peritoneal cavity, or in the pelvic subperitonæal tissue. This excludes all hæmorrhages, whatever their source, which do not form a tumor. The conditions only began to have clinical recognition after an observation by Récamier, in 1831, although Ruysch,¹ in 1691, had described the post-mortem appearances of a case. After Récamier, occasional cases were reported, until Nélaton, for the first time, clearly defined the condition, gave it the name of retro-uterine hæmatocele, and urged surgical measures for its relief. In France, particularly, the subject was much studied, resulting

¹ McClintock's "Diseases of Women."

in valuable observations by Trousseau, Gallard, Vegués, Ruech, Bernutz, and many others; in Germany, Crede, Flührer, Hegar, Braun, Schroeder, Ohlshausen, Martin Zweifel; in Great Britain, Tilt, West, Madge, Meadows, Barnes—but especially Simpson and McClintock; and in our own country, Byrne most of all, by his famous paper, gave great impetus to its clinical recognition and treatment.

This condition is only found during the menstruating life, commonly between twenty-one and forty-seven years. Notwithstanding the assertions of Fritsch and Schroeder, it is quite common; probably much more so among nulliparous than among multiparous patients. It appears to be quite as common among the wealthy as among the poor, though some writers maintain the contrary. That the condition should obtain among the better classes might be expected from their gynæcological ailments of a kind inducing pelvic congestion.

With regard to the frequency of its occurrence, authorities differ very much, inasmuch as Hugenberger, among 3,801 gynæcological cases had no case of hæmatocele; Ohlshausen, among 1,145, had 34; Seiffert, among 1,272, had 66. My father, Professor William P. Seymour, who has seen considerably over a hundred cases, in one week opening four, regards it as a very common affection. In one week in February I saw four cases, and since January 1st have had under my own care ten undoubted cases.

Dr. Thomas says that, while regarding hæmatocele as not an extremely rare condition, he is inclined to think many cases are diagnosticated hæmatoceles which are really cellulitis or peri-uterine or uterine tumors. That the distinguished gynæcological surgeon should so express himself is hardly to be wondered at; for it is to the general practitioners that the vast majority of cases first come, and that, too, before subsequent cellular inflammation has disguised the original condition; furthermore, an hæmatocele may be excited by a uterine or peri-uterine tumor, and yet have eventually disappeared by absorption. More cases escape recognition by slovenly diagnoses of inflammation of the bowels, or by being considered pelvic cellulitis, than are wrongly

regarded as hæmatocele. In some cases, owing to consequent cellular inflammation, nothing but a careful study of the history and puncture will decide.

With regard to the ætiology, it is convenient to divide the cases into two classes; those in which the symptoms are primary, and those in which it is secondary to a previously existent peritonitis. In the vast majority of cases the hæmorrhage, whatever the cause, is antecedent to the peritonitic symptoms; yet, on the other hand, there are undoubtedly cases in which, as is shown by Virchow and Bernutz, there is antecedent peritonitis, with the formation of new tissue and capillaries, the rupture of which leads to the formation of an hæmatocele. The intraperitonæal is very much more common than the subperitonæal hæmatocele.

In the majority of cases there is, according to McClintock, a history of dysmenorrhœa, and all are agreed that it is much more common among sufferers from ailments of the uterus and annexes than in those who were previously in good health.

The source of the hæmorrhage may be from a ruptured vessel, as: 1, utero-ovarian vessel; 2, broad ligament plexus; 3, vessels of extra-uterine pregnancy. From rupture of a pelvic organ: 1, ovary; 2, uterus—during parturition; 3, Fallopian tube (extra-uterine pregnancy). Reflux of menstrual blood transudation from blood-vessels: Scorbutus, hæmorrhagic peritonitis, purpura, diphtheria.

With regard to diphtheria as an ætiological factor, it has been my father's experience that during epidemics of diphtheria he has seen pelvic hæmatocele much more frequently than at other times, and in very many cases accompanied by diphtheritic symptoms of the most marked form. In women, a diphtheritic attack is not infrequently ushered in by profuse flooding. A few years back, Dr. Bucklin,¹ of Lansingburgh, New York, had, during an outburst of diphtheria, some twenty-five cases of peritonitis, all occurring in women. One of these cases was seen by my father, in consultation, and was a typical case of hæmatocele. Dr. Clark, in volume II of Pepper's "American System,"

¹ Oral communication (telephone), June 22, 1885.

page 1138, doubts diphtheria as being a cause of peritonitis, although he refers to two cases reported in the "American Journal of the Sciences," October, 1881, by Dr. Wm. C. Dabney. Both of these cases were apparently peritonitis from hæmatocele, and in one diphtheria was undoubtedly the cause.

The exciting causes are those which tend to induce pelvic congestion, and among them are to be included: Emotional excitement, excessive coitus, undue bodily exertion, dysmenorrhœa (from whatever cause), suppression of menses, presence of internal fibroid, hæmatosalpinx (imperforate tubes), and hæmatometra (imperforate vagina or cervix).

METHODS OF EXAMINATION.—With regard to the methods of examining a case, Bernutz¹ says that, were it not for the abdominal tenderness at the declaration of the attack, percussion of the abdomen would probably guide us to the detection of the effusion before the coagulation or encapsulation of the blood would enable us to recognize a tumor by digital examination. Be this as it may, it is upon the history and the detection by the touch of a tumor that our diagnosis is made absolute, and this is not possible within thirty-six hours,² save in the subperitoneal form, in which the tumor appears immediately. It is then by bimanual, and especially by the double touch that our clearest ideas of the tumor are to be gained. The careful use of probe or sound will also throw much light upon doubtful cases.

For this examination, the back or exaggerated lithotomy position is the best for the bimanual method, and the side or Sims position for the double touch. The double touch, especially when combined with a hand upon the abdomen, makes it possible for us to reach much higher on the posterior wall of the tumor, in order to better map out its relations by determining its encroachment upon the rectum and neighboring structures, and at the same time gives a far better conception of the con-

¹ "Dict. Med. et Chirurgie," vol. xvii, p. 304.

² Fluviot, in a case of rupture of an ovary in a subperitoneal pregnancy, dying on the fifth day, found a tumor the third day, and the autopsy on the fifth showed blood encysted by adhesions easily ruptured in the posterior *cul-de-sac*.—"Dict. Med. et Chirurgie."

sistence of the tumor. The speculum is of no value, although Nouat claimed a difference of tint of the vagina in intra and subperitonæal hæmatocele.

SUBJECTIVE SYMPTOMS.—In a typical case, either during or close to a “period,” the patient is suddenly taken with severe abdominal pain, faintness, pallor, nausea and vomiting, metrorrhagia or suppression, uterine colic, rectal and vesical tenesmus; the pulse and temperature are those of shock. Very often the patient feels a desire to expel a large body from the vagina or rectum.

OBJECTIVE SYMPTOMS.—With a weak, rapid pulse, and low temperature and pallor, there is an exquisitely tender abdomen. The tenderness is usually in the hypogastrium. Vaginal and rectal examination, apart from very great tenderness, gives negative results. Yet, as I have before mentioned, Bernutz thinks abdominal percussion, were it not for the excessive tenderness, would enable us to make out the effusion even before the touch would give us positive data.

To the first symptoms succeed, usually within thirty-six hours, reaction and evidences of peritonitis, and a little later vaginal and rectal touch discloses a tumor, usually posterior to the uterus in Douglas’s *cul-de-sac* (exceptionally in front of the uterus), and encroaching upon the vagina, and especially the rectum. The cervix is forced forward toward or against the pubes, and may lead to mistake in diagnosis unless, by the bimanual method and the cautious use of sound or probe, the retro-cervical mass is shown to be distinct from the uterus. Its superior limits are ill-defined as compared with organic affections of the uterus and its annexes, and in doubtful cases this may be of considerable diagnostic importance. By touch alone we ascertain: 1. The elastic softness of the tumor, later its baggy feel, and finally its nodular character; 2. Transmission of impulse from the abdominal part of the tumor to the finger in vagina; 3. Fluctuation, which, however, is very rarely marked in hæmatoceles. However, by touch alone we can not decide whether pus or blood constitutes the mass, and an exploratory puncture may be necessary. Both Bernutz and Nouat regard inflammation in

the neighborhood of the rectum as an evidence of impending rupture into the vagina or rectum.

In the differential diagnosis we must consider: Pelvic cellulitis, retroversion of the uterus, the pregnant or non-pregnant uterus, extra-uterine pregnancy, fibroid tumor, and ovarian tumor. From pelvic cellulitis hæmatocele is to be distinguished by the sudden appearance of the hæmatocele; by its being in the *cul-de-sac* rather than in the broad ligament; by its displacing the uterus forward rather than to one side; by the mobility of the uterus, which is in marked contrast to the fixedness of cellulitis, and by the fact that, while a purulent collection tends to increase, soften, and become more tender, the reverse is true of hæmatocele. The hæmatocele is never so hard as cellulitis, which is of more even surface, and of an almost bony hardness, even long after suppuration has ensued. It is not until there is a tendency to point, that fluctuation is to be detected in cellulitis. In hæmatocele the tumor is at first elastic, later doughy, pitting upon pressure, and finally, unless it suppurates, becomes by coagulation and absorption firm and nodular. The progress of cellulitis has a higher thermometric range, perhaps chills (these are rare in hæmatocele) and the local tenderness persist far longer even when there is a tendency to resolution.

It is not likely that a mistake will occur between hæmatocele and retroversion of the unimpregnated womb, but, in a case of retroversion of a gravid uterus, the symptoms of pregnancy, the increase of the size of the mass, and the absence of some of the more common symptoms of hæmatocele, will usually enable us to make a correct diagnosis.

In a case of either ovarian or fibroid tumor, the history and the sound and the bimanual method will decide. Yet, in a case of mine in which a large submucous fibroid was the exciting cause of an hæmatocele, it was only after repeated examinations, and by watching the contraction of the retro-uterine mass, that I was positive of my diagnosis.

The differential diagnosis between hæmatocele and extra-uterine pregnancy is most difficult, because the symptoms of pregnancy may be absent, and the rupture in extra-uterine preg-

nancy is itself not an infrequent cause of hæmatocele. The symptoms are identical when rupture takes place, and the patient survives. Where, however, the cyst does not rupture, it may, by reason of the uterus corresponding to the stage of pregnancy, be very difficult if not impossible to decide without employing the sound or digital examination of the uterine cavity.

However many symptoms a typical case may present, in not a few cases the only symptoms are intense pain at or near a menstrual period, with or without flooding, and a mass presenting the characters and course of an hæmatocele.

PROGNOSIS.—The greater number of cases recover under appropriate treatment, when they have been seen early and treated promptly. When a recourse to surgical treatment is only had on the appearance of threatening symptoms,¹ or when they are delayed two or three weeks, so that a firm investment may form,² we may not be surprised at Juisset's statistics of twenty-two deaths in twenty-eight cases. With an early appeal to surgical relief, on the appearance of inflammatory symptoms or increase of the tumor, the majority of patients will recover entirely. But it should be remembered that one attack predisposes to another, and that inflammation of the mass may lead, by formation of adhesions or by perforation into various organs, to the various accidents of septicæmia, strangulation of bowel, peritonitis, etc.

TREATMENT.—The first indication is to stop hæmorrhage and combat shock. For this purpose, if called early enough, ice and cold cloths may be applied to the abdomen and vulva, and ergot given subcutaneously, together with sulphuric acid and fluid extract hamamelis by the mouth. Morphia should be administered subcutaneously also to control pains and shock; and if necessary to establish reaction heat may be applied to the extremities, and brandy given by rectum or otherwise.

When reaction is established, the question is what to do with the effusion. Usually, rest and hot irrigations of the rectum

¹ Juisset, "Paris Thesis," 1883.

² Zweifel, "Archiv für Gynaecol.," Band xxii, Heft 2.

and vagina, with opium for pains, and quinine and aconite for the fever, will be sufficient for a cure. But if the mass shows a tendency to increase, to inflame, or by pressure to irritate neighboring organs, aspiration of the uncoagulated portion will in many cases bring prompt and permanent relief. My father, as the result of aspiration of many of these cases, has not only never seen any ill result from aspiration, but has even repeatedly seen this procedure cut short a tumor which was inflaming or increasing. When, however, suppuration has occurred, a free opening and drainage of the mass is necessary through the vagina, or abdomen and vagina. Simpson advocated a good free incision through the vagina, and turning out the clots, but his results in pre-aseptic times were far from encouraging. Now, in the present state of our knowledge, surgical treatment must be reconsidered, and to-day surgeons are divided between abdominal section and drainage, either through womb or vagina or both (as Schroeder, Martin, Tait, and Imlach), or by vaginal incision either with or without curetting with a dull curette (Zweifel).¹

Zweifel only operates in very large tumors, with protracted course, and waits two or three weeks before operating so that there may be a thick capsule. He never operates in the early stages. His entire practice, with its delay, its curetting, and his waiting for threatening symptoms, I regard as thoroughly bad surgery.

Schroeder, Martin, and Imlach, on the other hand, open the abdomen, lay open the hæmatocele, turn out the clots, and drain through the vagina. The peritonæal opening of the hæmatocele they sew up generally, but sometimes merely let it drop back. For large tumors I should prefer this, as giving a better view of the field, and as allowing better removal of *débris*, efficient drainage, and, in the case of offending tubes and ovaries, permitting their removal at the same time.

If in any case, when reaction has been established, the tumor be increased or inflamed, I would aspirate promptly and at

¹ "Archiv für Gynaecol.," Band xxii, Heft 2.

once. If this proved insufficient, I would incise freely through the vagina, drain and irrigate with strict antisepsis. If, however, there was a history of repeated attacks, I should prefer the abdominal section for reasons above given. Above all would I avoid the Micawberlike policy of "waiting for something to turn up."

SOME ÆTIOLOGICAL FACTORS IN THE ACNE-FORM DISEASES.

By GEORGE E. FELL, M. D., of Erie County.

Read by title, November 20, 1885.

It may be stated that the views propounded in this paper are based principally upon a few cases of acne, in which the common face parasite, the *Demodex folliculorum*, was found in great numbers in the pustules, both separate, i. e., mingled with the pus, and in the sebaceous matter of the skin. The parasite was discovered by Henle, in 1841, and also about the same time by Gustav Simon, of Berlin.

Duhring,¹ regarding *Demodex folliculorum*, says, "This minute creature (also designated *steatozoon*, etc.) inhabits the sebaceous follicles of healthy normal skin, and consequently gives rise to no symptoms whatever of disease. According to Meguin, it forms the only genus of a family of demodicides. A single species only occurs upon man, those found upon the dog, cat, sheep, and other animals being distinct, and not transferable to the skin of man." It is microscopic, varying in length from one twelfth (.1763 mm.) to one sixth (.3526 mm.), and has an elongated, rounded, worm-like form, made up of a head, thorax, and a long abdomen. Other shorter forms are also found. From the thorax come off eight stout, short, conical legs, all of the same size. The larva has only six² legs. The abdomen is usually from two to three times the length of the thorax, and tapers off to a rounded point.

The parasite exists in the sebaceous glands of the skin, in both sexes, especially about the face, nose, ears, back, and chest,

¹ "Diseases of the Skin," 2d edition, 1881, p. 612.

² Questioned.

and lives on sebaceous matter. Two, three, or more of them often exist in one follicle. It is said not to occur in infants. It is entirely inoffensive, and is met with in healthy skin quite as often as in those cases in which the sebaceous glandular system is markedly disturbed, as, for example, in acne or comedo. All persons, however, do not seem to give quarters to the creature; thick, greasy skins, more than thin, dry skins, afford a nidus. Individual specimens may be found as often, at least, as two or three times in ten persons.

No difficulty is experienced in obtaining the parasite in question from a likely subject. A prominent or patulous follicle or comedo upon the nose or forehead may be squeezed out, and the contents placed on a glass slide with a drop of olive-oil, and covered with a thin glass, when, with a power of from one to three hundred diameters one or more of them will be usually found.

Professor James C. White,¹ regarding the *Demodex folliculorum*, says, "This minute mite, which inhabits the hair follicles, needs only a mere mention, as it gives rise to no phenomena, is of frequent occurrence upon healthy skins, and requires no treatment."

Ziegler² says, regarding the same mite: "There is a third mite, which is found solitary or in small numbers in the sebaceous matter of the follicles in perfectly healthy skin. The head bears a proboscis and a pair of short antennæ. It has no pathological significance."

Erasmus Wilson³ says, in speaking of comedo, "And, when the follicular matter is abundant and rich in oil and albumen, we may discover another object in the midst of the mass, a living animal, the *steatozoon folliculorum*. As many as ten or twelve of these creatures are sometimes met with, feeding on the contents of the follicle, and they may be seen in every stage of development—ova, spade-shaped embryos, and perfect animals . . . these follicular entozoa give rise to no irritation of the follicle, nor are they the cause of disease; on the contrary, they

¹ "International Encyclopædia of Surgery," 1885, p. 666.

² "A Text-Book of Pathological Anatomy," 1884, p. 331.

³ "Cutaneous Medicine and Diseases," p. 204.

aid the restoration of the skin to health by disintegrating the accumulated mass (hairs, etc.), and thus facilitating its expulsion."

Wilson's local treatment of acne is composed of hypochloride of sulphur ointment and bichloride of mercury in spirits of wine, or in an emulsion of bitter almonds in proportion of one to two grains to the ounce. This may be dabbed on night and morning after ablution with soap. If the parasites are an important factor in the disease, this treatment would, undoubtedly, soon exterminate them or modify their development, and its action from this point of view is as reasonable as that from any other.

The quotations just given indicate the general view regarding the value of the *Demodex folliculorum* in diseased conditions, i. e., they are considered by the highest authorities (others besides those quoted) as entirely insignificant as pathogenic factors. From these and other statements it is seen that in suggesting the thought that these minute forms of life are ætiological factors in even some of the phases of acneform diseases, I shall be but little in accord with the highest authorities.

In antagonism to these views, so dogmatically stated, I may say that the results of my observations appear to indicate a close relationship of the parasites with the diseased condition. Their almost constant appearance in the newly-formed pustules (in the free pus frequently) and their presence in those of the indurated variety when quite deep seated can not be urged, in any just sense with our knowledge of the effect of foreign bodies in the tissues, as of no pathological import. It might as well be assumed that the *acarus scabiei*, the now well-known itch mite, is of no significance in the tissues, and then, again, it is quite reasonable to contend that the unnatural growths of the hair frequently found in the pustules of the human face, and which, when they act as foreign bodies, undoubtedly produce inflammatory action, are not so serious pathological factors as these little creatures, which have the power of moving about in the tissues. If we accept the views that the minute bacterial forms of life are productive of disease, how much easier

might we assume that the parasites referred to in these pages are pathogenic.

I may propound this question, Why is it that no really satisfactory constitutional treatment has been discovered for some of the forms of acne? In some of my female patients the digestive tract was in perfect function, menstruation normal in every respect; as far as objective symptoms were concerned no diseased condition prevailed except this inveterate and hideous acneform eruption which is usually confined to the face. The depressing effect on the mind of the patients produced by the steadily lasting eruption, kept up by the thought that the disease was incurable, and thought upon by others as possibly venereal, has frequently been noticeable. I fully believe that patients with this disease suffer in mind at least as greatly as those afflicted with the most serious maladies, not even excepting small-pox. I have known patients to lock themselves from the gaze of the world for months, to forego all society pleasures, to become, as treatment after treatment failed, as physician after physician gave up the case, utterly despondent of ever becoming rid of their tormenting malady. And can this be considered remarkable in the unsatisfactory light with which the best physicians generally view the case?

I can not give a better illustration of the truth of this statement than to quote some remarks from an article on acne.¹ "Acne is an inflammatory, usually chronic, disease of the sebaceous glands," giving the characteristics so well known and detailed in most of the works on this subject. Its causes are "numerous and varied," as, for instance, "character of the skin—persons with thick oily skins are most apt to suffer—and in pale, anæmic individuals with dry, rather harsh skins; puberty, scrofula and cachexia or general debility, anæmia and chlorosis, habitual derangement of the alimentary canal, dyspepsia, disorders of menstruation, a fresh outbreak may be expected before, during, or just after each menstrual period," and so on. These are a few only of the causes assigned for this apparently specific, *usually* localized disease.

¹ Wood's "Reference Hand-book of the Medical Sciences," 1st vol., 1885.

As to the treatment, that of a constitutional nature covers a wonderfully wide range of therapy; wherever we look we find this to be the case. Continuing our quotations from the article referred to above, as being one of the latest and most reliable on the subject, we find that Dr. Van Harlingen, the author of the paper, says, "The local treatment of acne is of great importance, especially with regard to the choice of remedies," among which he mentions that "unguent. hydrarg. precip. alb."; "sulphur and its preparations are among the most valuable remedies in our possession for treatment of acne in most of its forms." He also states that "indurated and pustular acne may be sometimes benefited by the application to each lesion of a drop of solution of the acid nitrate of mercury on a sharpened match, followed by bathing with hot water."

That our knowledge of the ætiology of this disease is decidedly indefinite is clearly shown in this article, and it is unnecessary to quote further, the fact being generally known to the profession. The same condition is frequently spoken of also as being of reflex origin, in precisely the same indefinite and unsatisfactory manner.

The case in which my attention was given to the contents of the follicles has been under observation for some time, during a good portion of which no treatment was prescribed. The first course of treatment produced an active inflammatory condition of the skin, which, however, was only sufficient to abate the severity of the case for a time. This treatment in one other case was eminently satisfactory, the disease not returning for several years, and then was quickly amenable to the same treatment. Dr. E. M. Moore saw this case with me, and I will have occasion to refer again to it in connection with the parasite question.

RESULTS OF EXAMINATION OF THE CONTENTS OF THE PUSTULES. — Miss L——. Health ordinarily good, menstruation regular, at one time troubled with dyspepsia. Had been treated locally and constitutionally by several of our best known physicians without any real satisfactory results. The case first referred to in the above paragraph.

September 19, 1885.—After making an incision a small drop of the pus was removed to a slide, a cover-glass placed over it, and examined with a four-tenths-inch objective of Bausch and Lomb. The first parasites were found October 19th. Only two were seen on the slide prepared. The question was propounded to myself, have they anything to do with the disease, or are they, as is generally stated and supposed, merely an accidental accompaniment of it. The continued observations which I detail in the following pages I believe show much more than an accidental accompaniment.

September 21, 1885.—On the first slide examined, nine of the parasites were observed, several within the field of the objective at one time. They were of various sizes, some had what I took to be eggs within their bodies. Four additional slides were prepared, and from two to four parasites were found on each. One slide which was made up principally of blood had none on it.

September 23, 1885.—Seven or eight slides prepared. One had seven or eight parasites, others five or six, and some only two or three on them. This date an ointment as follows was prescribed :

℞ Hydrarg. oleati..... 3 ij.
Sulphuris..... 3 iv.
Olei olivæ..... q. s.

M. ft. unguent. Sig. Apply on face two or three times daily.

The patient applied this ointment with great zeal, allowing it to remain on the face. The face became so much inflamed as to prevent the usual examination and treatment, and but four slides were prepared on 25th instant. From two to four of the acari were found on each slide.

September 28th.—Four slides prepared. The parasites found on all four. Face highly inflamed from the effects of the ointment.

September 30th.—Eight slides were prepared, seven from new pustules which had appeared since last treatment, and one from a highly inflamed portion of the face. The *demodex folliculorum* found on all but that taken from the highly irritated portion of the face.

October 2d.—I prepared thirty-three slides at one treatment, many from small pustules not before interfered with. Each slide contained either a portion or the entire amount of pus obtained

from each pustule. The results of observations of the slides were as follows : In nine the parasites were not found (but may have been overlooked). Blood was plentiful in most of these. In one, almost all blood, none were found. In ten several, or one to three or more found. In thirteen they were plentiful, some slides having from eight to twelve parasites. It is generally noted that the pus coming from the newly formed pustules, which come out in a somewhat indurated mass, most frequently contains the parasites, frequently free from the induration, whereas those from the pustules which have been treated some time have but few of these forms present.

October 5th.—Fourteen or fifteen slides were prepared, and mites examined in glycerine. They were found to be alive. In the great majority of cases two of them were together, often in a small oil globule, but quite as frequently free in the mass of pus corpuscles. A precaution to be observed, if it is desired to preserve the mites, is to mount them in a small cell to prevent them from being crushed as the cover glass approximates the slide.

The treatment continued three times weekly resulted in finding the parasites wherever new pustules had formed.

NOTE.—Sometimes, before any indication of a pustule is appreciated by the patient, on carefully passing the finger over the face, slight indurated points may be felt. On being incised, and the contents squeezed out by the fingers or the bistoury, the parasites are almost invariably found to be present. In cases where the indurations have required an incision of fully one half inch in depth the result has been similar.

October 23d.—Sixteen slides were prepared, in which the parasites were almost invariably found in numbers of from one to seven to each pustule.

October 28th.—My notes read as follows : Slides Nos. 1, 2, 3, contain four or five acari. No. 4, made from a large pustule from which the pus had been previously removed, contained but one form. Slides 5, 6, 7, 8 give similar results.

The improvement in the face has been noticed some time, the face is clearing up, the indurations decreasing on left side, forehead, and chin.

At this time, November 17th, many parts of the face free from the pustules, and the skin has assumed a healthy although

reddened appearance. The examinations of the contents of the pustules as they newly appeared have resulted in the finding of the parasites as before in the pus removed from them.

The belief that the treatment will effect a cure is based upon a case of similar identity, treated by the same methods; no return of the indurations or pustules has been noticed during the past six months. This case was seen by Dr. W. S. Tremaine, who can testify to its obstinacy under ordinary treatment.

That the contents of the pustules in this case of Miss H—— would have resulted in the discovery of the demodex, had examinations been made with the microscope, I have no reason to doubt.

The cases were identical in every respect, if objective symptoms can be depended on. Now comes an interesting feature—the case of Mrs. J. H. S., treated in March, 1882, and which Dr. E. M. Moore saw in consultation with me, I was informed this month had broken out slightly again, and that the lady was using the treatment which had been before successful in her case. I repaired to her residence, obtained permission to puncture the *only* pustule left, which measured not more than $\frac{1}{100}$ of an inch in diameter after being removed from the face, and on my return home, examination of this portion of pus revealed one of the parasites in active condition.

This occasional return of the pustules in decreased number, for the sake of argument, might be ascribed to the continued propagation of the organisms, the ova remaining in a dormant condition, or their development being interfered with for a time. I am unaware as to the time of development of the demodeces, for even had the problem been worked out there might be many conditions which would retard their growth and make the period of freedom from the eruption variable in different cases. Again, in many instances the mites were found deep in the tissue, as evidenced on finding them where indurations were incised, and on being squeezed the pus removed was also found to contain them. The time required to carry this irritation to the surface of the skin would give another possible variable quantity in the question.

I have looked over the ground quite fully regarding the possible causes of the acneform diseases, and while not desiring to question the views of the majority, as to the ætiological factors, I present these remarks for consideration. I believe that notwithstanding the general prevalence of these mites in the so-called normal tissue of the face, neck, nose, etc., their presence in extraordinary numbers may be productive of pathological changes, in some varieties of these diseases, of considerable importance.

I may say in closing that my notes were much more fully detailed than the paper might indicate, as in almost every treatment the microscope was brought into use. I regret that a greater number of cases have not been worked out in this manner, and, if opportunity offers, I propose to continue the observations until I have reason to be more fully satisfied. Part of my object is to stimulate others to work in the same field.

CODE OF MEDICAL ETHICS.¹

OF THE DUTIES OF PHYSICIANS TO THEIR PATIENTS, AND OF THE
OBLIGATIONS OF PATIENTS TO THEIR PHYSICIANS.

ART. I.—*Duties of physicians to their patients.*

§ 1. A physician should not only be ever ready to obey the calls of the sick, but his mind ought also to be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge. These obligations are the more deep and enduring, because there is no tribunal other than his own conscience to adjudge penalties for carelessness or neglect. Physicians should, therefore, minister to the sick with due impressions of the importance of their office; reflecting that the ease, the health, and the lives of those committed to their charge, depend on their skill, attention, and fidelity. They should study, also, in their deportment, so to unite *tenderness* with *firmness*, and *condescension* with *authority*, as to inspire the minds of their patients with gratitude, respect, and confidence.

§ 2. Every case committed to the charge of a physician should be treated with attention, steadiness, and humanity. Reasonable indulgence should be granted to the mental imbecility and caprices of the sick. Secrecy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which physicians are admitted in their professional visits, should be used with discretion, and with the most scrupulous regard to fidelity and honor. The obligation of secrecy extends beyond the period of professional

¹ Taken from the "Transactions of the American Medical Association."

services ;—none of the privacies of personal and domestic life, no infirmity of disposition or flaw of character observed during professional attendance should ever be divulged by the physician except when he is imperatively required to do so. The force and necessity of this obligation are indeed so great that professional men have, under certain circumstances, been protected in their observance of secrecy by courts of justice.

§ 3. Frequent visits to the sick are in general requisite, since they enable the physician to arrive at a more perfect knowledge of the disease—to meet promptly every change which may occur, and also tend to preserve the confidence of the patient. But unnecessary visits are to be avoided, as they give useless anxiety to the patient, tend to diminish the authority of the physician, and render him liable to be suspected of interested motives.

§ 4. A physician should not be forward to make gloomy prognostications, because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease. But he should not fail, on proper occasions, to give to the friends of the patient timely notice of danger when it really occurs ; and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy. For the physician should be the minister of hope and comfort to the sick ; that, by such cordials to the drooping spirit, he may smooth the bed of death, revive expiring life, and counteract the depressing influence of those maladies which often disturb the tranquillity of the most resigned in their last moments. The life of a sick person can be shortened not only by the acts, but also by the words or the manner of a physician. It is, therefore, a sacred duty to guard himself carefully in this respect, and to avoid all things which have a tendency to discourage the patient and to depress his spirits.

§ 5. A physician ought not to abandon a patient because the case is deemed incurable ; for his attendance may continue to be highly useful to the patient, and comforting to the relatives around him, even in the last period of a fatal malady, by alleviating pain and other symptoms, and by soothing mental anguish. To decline attendance, under such circumstances, would be sacri-

ficing to fanciful delicacy and mistaken liberality, that moral duty which is independent of, and far superior to, all pecuniary consideration.

§ 6. Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice.

§ 7. The opportunity which a physician not unfrequently enjoys, of promoting and strengthening the good resolutions of his patients, suffering under the consequences of vicious conduct, ought never to be neglected. His counsels, or even remonstrances, will give satisfaction, not offense, if they be proffered with politeness, and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

ART. II.—*Obligations of patients to their physicians.*

§ 1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties toward the community, and who are required to make so many sacrifices of comfort, ease, and health, for the welfare of those who avail themselves of their services, certainly have a right to expect and require, that their patients should entertain a just sense of the duties which they owe to their medical attendants.

§ 2. The first duty of a patient is to select as his medical adviser one who has received a regular professional education. In no trade or occupation do mankind rely on the skill of an untaught artist; and in medicine, confessedly the most difficult and intricate of the sciences, the world ought not to suppose that knowledge is intuitive.

§ 3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional obligations. A patient should, also, confide the care of himself and family, as much as possible, to one physician: for a medical man who has become acquainted with the peculiarities of constitution, habits, and predispositions of those he attends, is more likely to be successful in his treatment than one who does not possess that knowledge.

A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the

most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases ; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

§ 4. Patients should faithfully and unreservedly communicate to their physician the supposed cause of their disease. This is the more important, as many diseases of a mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser ; he should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms, and causes of complaints peculiar to them. However commendable a modest reserve may be in the common occurrences of life, its strict observance in medicine is often attended with the most serious consequences, and a patient may sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

§ 5. A patient should never weary his physician with a tedious detail of events or matters not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude upon his physician the details of his business nor the history of his family concerns.

§ 6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink, and exercise. As patients become convalescent, they are very apt to suppose that the rules prescribed for them may be disregarded, and the consequence, but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses who are so frequently met with, and who pretend to possess infallible remedies

for the cure of every disease. However simple some of their prescriptions may appear to be, it often happens that they are productive of much mischief, and in all cases they are injurious, by contravening the plan of treatment adopted by the physician.

§ 7. A patient should, if possible, avoid even the *friendly visits of a physician* who is not attending him—and when he does receive them, he should never converse on the subject of his disease, ~~as~~ an observation may be made, without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert; for, although their modes of treatment may be attended with equal success when employed singly, yet conjointly they are very likely to be productive of disastrous results.

§ 8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

§ 9. Patients should always, when practicable, send for their physician in the morning, before his usual hour of going out; for, by being early aware of the visits he has to pay during the day, the physician is able to apportion his time in such a manner as to prevent an interference of engagements. Patients should also avoid calling on their medical adviser unnecessarily during the hours devoted to meals or sleep. They should always be in readiness to receive the visits of their physician, as the detention of a few minutes is often of serious inconvenience to him.

§ 10. A patient should, after his recovery, entertain a just and enduring sense of the value of the services rendered him by his physician; for these are of such a character, that no mere pecuniary acknowledgment can repay or cancel them.

OF THE DUTIES OF PHYSICIANS TO EACH OTHER, AND TO THE PROFESSION AT LARGE.

ART. I.—*Duties for the support of professional character.*

§ 1. Every individual, on entering the profession, as he becomes thereby entitled to all its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and

honor, to exalt its standing, and to extend the bounds of its usefulness. He should, therefore, observe strictly such laws as are instituted for the government of its members ; should avoid all contumelious and sarcastic remarks relative to the faculty as a body ; and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain a due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it.

§ 2. It is not in accord with the interests of the public or the honor of the profession that any physician or medical teacher should examine or sign diplomas or certificates of proficiency for, or otherwise be specially concerned with, the graduation of persons whom they have good reason to believe intend to support and practice any exclusive and irregular system of medicine.

§ 3. There is no profession, from the members of which greater purity of character, and a higher standard of moral excellence are required, than the medical ; and to attain such eminence is a duty every physician owes alike to his profession and to his patients. It is due to the latter, as without it he can not command their respect and confidence, and to both, because no scientific attainments can compensate for the want of correct moral principles. It is also incumbent upon the faculty to be temperate in all things, for the practice of physic requires the unremitting exercise of a clear and vigorous understanding ; and, on emergencies, for which no professional man should be unprepared, a steady hand, an acute eye, and an unclouded head may be essential to the well-being, and even to the life, of a fellow-creature.

§ 4. It is derogatory to the dignity of the profession to resort to public advertisements, or private cards, or handbills, inviting the attention of individuals affected with particular diseases—publicly offering advice and medicine to the poor gratis, or promising radical cures ; or to publish cases and operations in the daily prints, or suffer such publications to be made ; to invite laymen to be present at operations, to boast of cures and remedies, to adduce certificates of skill and success, or to perform any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician.

§ 5. Equally derogatory to professional character is it for a physician to hold a patent for any surgical instrument or medi-

cine ; or to dispense a secret *nostrum*, whether it be the composition or exclusive property of himself or of others. For, if such *nostrum* be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality ; and if mystery alone give it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them.

ART. II.—*Professional services of physicians to each other.*

§ 1. All practitioners of medicine, their wives, and their children while under the paternal care, are entitled to the gratuitous services of any one or more of the faculty residing near them, whose assistance may be desired. A physician afflicted with disease is usually an incompetent judge of his own case ; and the natural anxiety and solicitude which he experiences at the sickness of a wife, a child, or any one who, by the ties of consanguinity, is rendered peculiarly dear to him, tend to obscure his judgment, and produce timidity and irresolution in his practice. Under such circumstances, medical men are peculiarly dependent upon each other, and kind offices and professional aid should always be cheerfully and gratuitously afforded. Visits ought not, however, to be obtruded officiously ; as such unasked civility may give rise to embarrassment, or interfere with that choice on which confidence depends. But, if a distant member of the faculty, whose circumstances are affluent, request attendance, and an honorarium be offered, it should not be declined ; for no pecuniary obligation ought to be imposed, which the party receiving it would wish not to incur.

ART. III.—*Of the duties of physicians as respects vicarious offices.*

§ 1. The affairs of life, the pursuit of health, and the various accidents and contingencies to which a medical man is peculiarly exposed, sometimes require him temporarily to withdraw from his duties to his patients, and to request some of his professional brethren to officiate for him. Compliance with this request is an act of courtesy, which should always be performed with the utmost consideration for the interest and character of the family physician,

and, when exercised for a short period, all the pecuniary obligations for such service should be awarded to him. But if a member of the profession neglect his business in quest of pleasure and amusement, he can not be considered as entitled to the advantages of the frequent and long-continued exercise of this fraternal courtesy, without awarding to the physician who officiates, the fees arising from the discharge of his professional duties.

In obstetrical and important surgical cases, which give rise to unusual fatigue, anxiety, and responsibility, it is just that the fees accruing therefrom should be awarded to the physician who officiates.

ART. IV.—*Of the duties of physicians in regard to consultations.*

§ 1. A regular medical education furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession. Nevertheless, as in consultations the good of the patient is the sole object in view, and this is often dependent on personal confidence, no intelligent regular practitioner, who has a license to practice from some medical board of known and acknowledged respectability, recognized by this Association, and who is in good moral and professional standing in the place in which he resides, should be fastidiously excluded from fellowship, or his aid refused in consultation, when it is requested by the patient. But no one can be considered as a regular practitioner or a fit associate in consultation, whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology, and organic chemistry.

§ 2. In consultations, no rivalry or jealousy should be indulged; candor, probity, and all due respect should be exercised toward the physician having charge of the case.

§ 3. In consultations, the attending physician should be the first to propose the necessary questions to the sick; after which the consulting physician should have the opportunity to make such further inquiries of the patient as may be necessary to satisfy him of the true character of the case. Both physicians should then retire to a private place for deliberation; and the one first in attendance should communicate the directions agreed upon to the

patient or his friends, as well as any opinions which it may be thought proper to express. But no statement or discussion of it should take place before the patient or his friends, except in the presence of all the faculty attending, and by their common consent; and no *opinions* or *prognostications* should be delivered which are not the result of previous deliberation and concurrence.

§ 4. In consultations, the physician in attendance should deliver his opinion first; and when there are several consulting, they should deliver their opinions in the order in which they have been called in. No decision, however, should restrain the attending physician from making such variations in the mode of treatment as any subsequent unexpected change in the character of the case may demand. But such variation, and the reasons for it, ought to be carefully detailed at the next meeting in consultation. The same privilege belongs also to the consulting physician if he is sent for in an emergency, when the regular attendant is out of the way, and similar explanations must be made by him at the next consultation.

§ 5. The utmost punctuality should be observed in the visits of physicians when they are to hold consultation together, and this is generally practicable, for society has been considerate enough to allow the plea of a professional engagement to take precedence of all others, and to be an ample reason for the relinquishment of any present occupation. But as professional engagements may sometimes interfere, and delay one of the parties, the physician who first arrives should wait for his associate a reasonable period, after which the consultation should be considered as postponed to a new appointment. If it be the attending physician who is present, he will, of course, see the patient and prescribe; but if it be the consulting one, he should retire, except in case of emergency, or when he has been called from a considerable distance, in which latter case he may examine the patient, and give his opinion in *writing*, and *under seal*, to be delivered to his associate.

§ 6. In consultations, theoretical discussions should be avoided, as occasioning perplexity and loss of time. For there may be much diversity of opinion concerning speculative points, with perfect agreement in those modes of practice which are founded, not on hypothesis, but on experience and observation.

§ 7. All discussions in consultation should be held as secret and confidential. Neither by words nor manner should any of the parties to a consultation assert or insinuate that any part of the treatment pursued did not receive his assent. The responsibility must be equally divided between the medical attendants—they must equally share the credit of success as well as the blame of failure.

§ 8. Should an irreconcilable diversity of opinion occur when several physicians are called upon to consult together, the opinion of the majority should be considered as decisive ; but if the numbers be equal on each side, then the decision should rest with the attending physician. It may, moreover, sometimes happen that two physicians can not agree in their views of the nature of a case, and the treatment to be pursued. This is a circumstance much to be deplored, and should always be avoided, if possible, by mutual concessions, as far as they can be justified by a conscientious regard for the dictates of judgment. But in the event of its occurrence, a third physician should, if practicable, be called to act as umpire ; and, if circumstances prevent the adoption of this course, it must be left to the patient to select the physician in whom he is most willing to confide. But, as every physician relies upon the rectitude of his judgment, he should, when left in the minority, politely and consistently retire from any further deliberation in the consultation, or participation in the management of the case.

§ 9. As circumstances sometimes occur to render a *special consultation* desirable, when the continued attendance of two physicians might be objectionable to the patient, the member of the faculty whose assistance is required in such cases should sedulously guard against all future unsolicited attendance. As such consultations require an extraordinary portion of both time and attention, at least a double honorarium may be reasonably expected.

§ 10. A physician who is called upon to consult, should observe the most honorable and scrupulous regard for the character and standing of the practitioner in attendance ; the practice of the latter, if necessary, should be justified as far as it can be, consistently with a conscientious regard for truth, and no hint or insinuation should be thrown out which could impair the confidence reposed in him, or affect his reputation. The consulting physician

should also carefully refrain from any of those extraordinary attentions or assiduities which are too often practiced by the dishonest for the base purpose of gaining applause, or ingratiating themselves into the favor of families and individuals.

ART. V.—*Duties of physicians in cases of interference.*

§ 1. Medicine is a liberal profession, and those admitted into its ranks should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

§ 2. A physician, in his intercourse with a patient under the care of another practitioner, should observe the strictest caution and reserve. No meddling inquiries should be made—no disingenuous hints given relative to the nature and treatment of his disorder; nor any course of conduct pursued that may directly or indirectly tend to diminish the trust reposed in the physician employed.

§ 3. The same circumspection and reserve should be observed when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no particular inquiries should be instituted relative to the nature of the disease or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

§ 4. A physician ought not to take charge of or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, or in consultation with the physician previously in attendance, or when the latter has relinquished the case, or been regularly notified that his services are no longer desired. Under such circumstances, no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should be justified as far as candor and regard for truth and probity will permit; for it often happens that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success in the first stage of treatment, affords no evidence of a lack of professional knowledge and skill.

§ 5. When a physician is called to an urgent case, because the family attendant is not at hand, he ought, unless his assistance in consultation be desired, to resign the care of the patient to the latter immediately on his arrival.

§ 6. It often happens in cases of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances, courtesy should assign the patient to the first who arrives, who should select from those present any additional assistance that he may deem necessary. In all such cases, however, the practitioner who officiates should request the family physician, if there be one, to be called, and, unless his further attendance be requested, should resign the case to the latter on his arrival.

§ 7. When a physician is called to the patient of another practitioner, in consequence of the sickness or absence of the latter, he ought, on the return or recovery of the regular attendant and with the consent of the patient, to surrender the case.

[The expression, "patient of another practitioner," is understood to mean a patient who may have been under the charge of another practitioner at the time of the attack of sickness, or departure from home of the latter, or who may have called for his attendance during absence or sickness, or in any other manner given it to be understood that he regarded the said physician as his regular medical attendant.]

§ 8. A physician, when visiting a sick person in the country, may be desired to see a neighboring patient who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no further than is absolutely necessary with the general plan of treatment; to assume no future direction unless it be expressly desired; and, in this last case, to request an immediate consultation with the practitioner previously employed.

§ 9. A wealthy physician should not give advice *gratis* to the affluent; because his doing so is an injury to his professional brethren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the

common funds for its support, when fees are dispensed with which might justly be claimed.

§ 10. When a physician who has been engaged to attend a case of midwifery is absent, and another is sent for, if delivery is accomplished during the attendance of the latter, he is entitled to the fee, but should resign his patient to the practitioner first engaged.

ART. VI.—*Of differences between physicians.*

§ 1. Diversity of opinion and opposition of interest may, in the medical as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and can not be immediately terminated, they should be referred to the arbitration of a sufficient number of physicians or a *court-medical*.

§ 2. As peculiar reserve must be maintained by physicians toward the public in regard to professional matters, and as there exist numerous points in medical ethics and etiquette through which the feelings of medical men may be painfully assailed in their intercourse with each other, and which can not be understood or appreciated by general society, neither the subject-matter of such differences nor the adjudication of the arbitrators should be made public, as publicity in a case of this nature may be personally injurious to the individuals concerned, and can hardly fail to bring discredit on the faculty.

ART. VII.—*Of pecuniary acknowledgments.*

Some general rules should be adopted by the faculty, in every town or district, relative to *pecuniary acknowledgments* from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying circumstances will admit.

OF THE DUTIES OF THE PROFESSION TO THE PUBLIC, AND OF THE OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

ART. I.—*Duties of the profession to the public.*

§ 1. As good citizens, it is the duty of physicians to be ever vigilant for the welfare of the community, and to bear their part

in sustaining its institutions and burdens ; they should also be ever ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiene, and legal medicine. It is their province to enlighten the public in regard to quarantine regulations ; the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions ; in relation to the medical police of towns, as drainage, ventilation, etc. ; and in regard to measures for the prevention of epidemic and contagious diseases ; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.

§ 2. Medical men should also be always ready, when called on by the legally constituted authorities, to enlighten coroners' inquests and courts of justice on subjects strictly medical—such as involve questions relating to sanity, legitimacy, murder by poisons or other violent means, and in regard to the various other subjects embraced in the science of Medical Jurisprudence. But in these cases, and especially where they are required to make a *post-mortem* examination, it is just, in consequence of the time, labor, and skill required, and the responsibility and risk they incur, that the public should award them a proper honorarium.

§ 3. There is no profession by the members of which eleemosynary services are more liberally dispensed than the medical, but justice requires that some limits should be placed to the performance of such good offices. Poverty, professional brotherhood, and certain of the public duties referred to in the first section of this article, should always be recognized as presenting valid claims for gratuitous services ; but neither institutions endowed by the public or by rich individuals, societies for mutual benefit, for the insurance of lives or for analogous purposes, nor any profession or occupation, can be admitted to possess such privilege. Nor can it be justly expected of physicians to furnish certificates of inability to serve on juries, to perform militia duty, or to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without a pecuniary acknowledgment. But to individuals in indigent circumstances, such professional services should always be cheerfully and freely accorded.

§ 4. It is the duty of physicians, who are frequent witnesses

of the enormities committed by quackery, and the injury to health and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries sustained by the unwary from the devices and pretensions of artful empirics and impostors. Physicians ought to use all the influence which they may possess, as professors in Colleges of Pharmacy, and by exercising their option in regard to the shops to which their prescriptions shall be sent, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture and sale.

ART. II.—*Obligations of the public to physicians.*

§ 1. The benefits accruing to the public, directly and indirectly, from the active and unwearied beneficence of the profession, are so numerous and important, that physicians are justly entitled to the utmost consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications; to make a proper discrimination between true science and the assumptions of ignorance and empiricism; to afford every encouragement and facility for the acquisition of medical education—and no longer to allow the statute-books to exhibit the anomaly of exacting knowledge from physicians, under a liability to heavy penalties, and of making them obnoxious to punishment for resorting to the only means of obtaining it.

EXPLANATORY DECLARATIONS.¹

Dr. Davis reported for a special committee on explanatory declarations concerning the proper interpretation of the Code of Ethics, appointed at the meeting of May, 1884. The committee submitted the following preamble and resolutions:

Whereas, Persistent misrepresentations have been and still are being made concerning the provisions of the Code of Ethics of the American Medical Association, which many, even in the

¹ Official Record of the American Medical Association, thirty-sixth annual meeting, held in New Orleans, La., April 28, 29, 30, and May 1, 1885.

ranks of the profession, are led to believe—as, for instance, that the code excludes persons from professional recognition simply because of difference of opinion on doctrines—therefore,

Resolved, First, that Clause I., Article IV., of the National Code of Medical Ethics, is not to be interpreted as excluding from professional fellowship, on the ground of difference in doctrine or belief, those who in other respects are entitled to be members of the regular medical profession. Neither is there any article or clause in the said Code of Ethics that interferes with the most perfect liberty of individual opinion and practice.

Second, That it constitutes voluntary disconnection, or withdrawal from the medical profession proper, to assume a title indicating to the public an exclusive or a sectarian system of practice, or to belong to an association or party antagonistic to the general medical profession.

Third, That there is no provision in the National Code of Medical Ethics in any wise inconsistent with the broadest dictates of humanity, and that the article of the Code which relates to consultations can not be correctly interpreted as interdicting under any circumstances the rendering of professional services whenever there is pressing or immediate need of them; on the contrary, to meet promptly the emergencies of disease, of accident, and to give a helping hand, without unnecessary delay, is a duty enjoined on every member of the profession both by the letter and spirit of the entire Code. But no such emergencies or circumstances can make it necessary or proper to enter into formal professional consultations with those who voluntarily have disconnected themselves from the regular medical profession in the manner indicated by the preceding resolution.

N. S. DAVIS, of Chicago.

A. Y. P. GARNETT, of Washington.

H. F. CAMPBELL, of Augusta, Ga.

AUSTIN FLINT, of New York.

J. B. MURDOCK, of Pittsburg.

On motion of Dr. Brodie, the resolutions were unanimously adopted. On motion of Dr. Keller, it was unanimously agreed that the resolutions be added as an explanatory addendum in all future publications of the Code.

PROCEEDINGS.

SECOND ANNUAL MEETING OF THE NEW YORK STATE MEDICAL ASSOCIATION.

HELD AT THE MURRAY HILL HOTEL, IN NEW YORK CITY,
November 17, 18, 19, and at the Carnegie Laboratory, November 20, 1885.

FIRST DAY, TUESDAY, NOVEMBER 17, 1885.

Morning Session.

THE Association was called to order at 9.30 A. M. by the President, Dr. John P. Gray, of Oneida County.

The Secretary announced that the registration had proceeded so slowly it would be impossible to announce at the present time the number of attendants present from each District.

The report of the Committee of Arrangements was read by the chairman, Dr. John W. S. Gouley, of New York County. (See page 27.)

Upon motion of Dr. E. D. Ferguson the report of the Committee of Arrangements was accepted, and the suggestions therein contained were adopted.

At the request of the President the Secretary then announced the Committee on Scientific Contributions, as follows: Dr. E. S. F. Arnold, Fifth District, Chairman; Dr. T. M. Flandrau, First District; Dr. J. B. Harvie, Second District; Dr. N. Jacobson, Third District; Dr. Charles G. Stockton, Fourth District.

Dr. Ferguson moved the suspension of the order of business only so far as to allow the President's address to succeed the report of the special committees. Carried.

The annual report of the Council was then read by Dr. E. D. Ferguson, Secretary of the Council.

The report of the Council was then accepted and adopted. The suggestions therein contained were referred to the Committee on Scientific Contributions to designate the time for their consideration.

Dr. Gouley then offered a resolution, that if there be a surplus over and above the expenses incurred for the entertainment of Thursday night, November 19th, such surplus be transferred to the Treasurer of the Association as an appropriation to the library fund. The resolution was seconded by Dr. J. C. Greene, of Erie County, and carried unanimously.

Dr. John H. Hinton, of New York County, the Treasurer of the Association, then presented the following report for the year ending November 11, 1885 :

GENERAL FUND.

Receipts.

284 Initiation fees.....	\$1,420 00		
347 Dues.....	1,041 00		
		\$2,461 00	
Balance in treasury November 17, 1884		683 51	\$3,144 51

Disbursements.

D. Appleton & Co., 1st volume transactions of 1884... ..	\$2,008 86		
D. Appleton & Co., express on 497 volumes.....	73 28		
D. Appleton & Co., binding 248 volumes.....	94 24		
D. Appleton & Co., postage on 136 volumes.....	27 39	\$2,203 77	
Dr. E. D. Ferguson, sundries.....	271 57		
W. J. Murray, 700 certificates....	101 00		
H. H. B. Angell, printing.....	201 37		
Dr. R. C. Schultz, stenographic reporter, annual meeting.....	75 00		
George Gregory, 1,500 stamped envelopes, etc.....	36 75		
G. F. Nesbitt & Co., books, constitution, etc.....	32 00		
W. H. Flint, revising manuscript..	15 00		
H. L. Sprague, drafting trustee report.....	10 00		
Postage, paper, etc.....	4 41	747 10	2,950 87

Balance in general fund November 11, 1885,

\$193 64

Balance in general fund November 11, 1885,

\$193 64

LIBRARY FUND.

Receipts.

Dr. J. W. S. Gouley, surplus of anniversary subscription (\$315 Building fund; \$315 Library fund).....	\$630 00	
Dr. J. W. S. Gouley, donation.....	30 00	
John H. Hinton.....	11 88	
Thomas Wilson.....	5 00	\$676 88

Disbursements.

De Graaf & Taylor, book-cases, etc.....	260 00	
H. H. Angell, printer.....	80 25	340 25

Balance in Library Fund November 11, 1885,

336 63

Balance in treasury November 11, 1885,

\$530 27

The report of the Treasurer was accepted, and referred to a committee to audit the account.

Dr. Ferguson then said that he would, with the permission of the chairman, propose some amendments to the By-Laws. He wished it, however, to be understood that he had no desire to tinker with that which had been settled, but some of the amendments were a necessity, and some he believed would be an improvement over the existing provisions. He stated that it would save confusion to have only one secretary for the organization; and that Secretary Green fully concurred with him in this view. He believed that it would be to the interest of the Association to adopt the amendments, and was glad to offer them, as the proposed amendments would relieve the corresponding and statistical secretary of his work.

The amendments were as follows :

PROPOSED AMENDMENTS TO THE CONSTITUTION AND
BY-LAWS.

CONSTITUTION.

ART. II. SEC. 1. First or Northern District : Take out Clinton, Essex and Warren Counties, and add Fulton and Montgomery. Second or Eastern District : Take out Fulton and Montgomery Counties, and add Clinton, Essex and Warren.

SEC. 3. Strike out "In existing county societies, in the New

York Academy of Medicine, or in county or district associations or societies in affiliation with this Association."

SEC. 4. Strike out the whole section.

SEC. 5 becomes Sec. 4.

SEC. 6 becomes Sec. 5.

SEC. 7 becomes Sec. 6.

SEC. 8 becomes Sec. 7.

SEC. 9 becomes Sec. 8.

SEC. 10 becomes Sec. 9.

SEC. 11 becomes Sec. 10.

ART. III. SEC. 1. Read : The titular officers of the Association shall be a President and four Vice-Presidents (one of these five officers to come from each of the five districts), a Secretary, a Treasurer, and a Director of the Library. In addition, etc.

SEC. 2 shall read as follows : The President and Vice-Presidents shall be elected for the term of one year. The elected members of the Council shall serve each for the term of two years. The Secretary, Treasurer, and Director of the Library shall each be elected for the term of three years. The member of the Council appointed at large by the President-elect shall serve for the term of one year.

BY-LAWS.

ART. II. SEC. 2. Read : One of the Vice-Presidents, at the request of the President, or, in the President's absence, the Vice-President selected by the Vice-Presidents present at the meeting, shall temporarily perform, etc., etc.

SEC. 3. Strike out the word "recording," and all after the words "office of secretary."

SEC. 4 to become part of Sec. 3. Strike out the words, "The corresponding and statistical secretary" at the beginning of the section and substitute "He."

In the remaining portions of the section, strike out, wherever they occur, the words "corresponding and statistical."

SEC. 5 becomes SEC. 4.

SEC. 5 (a new section). The Director of the Library shall have charge of the Library, under the direction of the Council, and he shall be Chairman of the Library Committee.

The Council may appoint a Librarian with such duties as may

be found expedient, said Librarian to be under the direction of the Director of the Library.

SEC. 6. Read : The Secretary, Treasurer, and Director of the Library shall together constitute, etc.

ART. III. SEC. 3. After the word "writing," add "or printing."

SEC. 5. For "secretaries" read "secretary."

SEC. 6. Read : The President and Secretary, assisted by the Committee of Arrangements, shall provide, etc.

ART. IV. SEC. 1. For "Sections 3 and 4" read "Section 3."

SEC. 2. Strike out "corresponding and statistical."

SEC. 5. Strike out "corresponding and statistical."

ART. V. SEC. 6. Strike out "corresponding and statistical."

ART. IX. SEC. 3. Order II. Strike out the word "recording."

Dr. Ferguson further moved the reception of the amendments, and asked that they be laid over until next year, to be acted upon by the Association. Carried.

The President announced the following committee on auditing the Treasurer's accounts : Dr. Hovey, of Monroe County, Dr. MacDonald, of Cayuga County, and Dr. Clark, of Niagara County.

The report of the Committee on Badges was called for.

The chairman, Dr. Gouley, reported that the Association medals would be ready for delivery at three o'clock in the afternoon, and stated that the Association had no financial interest whatever in the medal, and he believed that the price had been reduced to a minimum.

The President, Dr. John P. Gray, of Oneida County, then delivered the annual address. (See page 32.)

Dr. E. H. Squibb, of Kings County, read a number of proposed amendments to the plan of organization of the District Branches as follows :

It is recommended that the date for the annual meeting of the Fifth District Branch be changed to the fourth Tuesday in May. (Sec. 14 of the Constitution.)

Amendment recommended to Sec. 16. (Registration Committee.) To read as follows: "The Secretary and two Fellows appointed by the Executive Committee shall be a Registration Committee," etc.

Proposed Amendment to Sec. 15 of the Constitution of the Branch Associations:

Recommended that Sec. 15 shall read as follows: "There shall be no initiation fees or dues; but a small assessment shall be required of each Fellow, sufficient to defray the necessary expenses of the meetings. The amount and the manner of collecting this assessment shall be determined by the Executive Committee, provided that it does not exceed one dollar for each Fellow for any one current year."

Dr. Ferguson moved that the amendments be received and laid over until next year for action. Carried.

The annual reports of the presidents of the Branch Associations were called for.

The President remarked that the reports developed the gratifying fact that a large amount of work had resulted from the existence and plan of these District Organizations.

The report of the First District Branch was read for the President thereof by the Corresponding Secretary.

The report of the Second District Branch was read by Vice-President William H. Robb, of Montgomery County.

The report of the Third District Branch was read by Vice-President John G. Orton, of Broome County.

The report of the Fourth District Branch was read by Vice-President J. C. Greene, of Erie County.

The report of the Fifth District Branch was read by the Corresponding Secretary, Vice-President Hutchison being absent.

The annual report of the New York County Medical Association was read by the President, Dr. Charles A. Leale.

The above reports were on motion referred to the Committee on Publications, bearing the especial indorsement of the Association as regards their value.

The Corresponding Secretary announced that in accordance with the action of the District Branches there were present representatives from each District upon a joint committee to draft a common form of By-Laws for the District Associations, a meeting of which would be called at the close of the morning session.

The address on State Medicine was then read by Dr. Alfred L. Carroll, of Richmond County. (See page 42.)

Dr. John P. Garrish, of New York, extended an invitation to the non-resident members of the Association to visit the exhibition of the American Institute, and was ready to supply the complimentary tickets.

President Gray introduced to the Association Dr. C. T. Bild, of Bridgeport, Conn.

The Association then took a recess of ten minutes for the purpose of allowing the Fellows from the different districts to appoint two members of the Nominating Committee from each district.

When the meeting was called to order the Secretary reported the following elections upon the Nominating Committee: First District, Dr. I. H. Abell, Jefferson County, and Dr. William Gillis, Franklin County. Second District, Dr. H. C. Van Zandt, Schenectady County, and Dr. J. B. Harvie, Rensselaer County. Third District, Dr. H. O. Jewett, Cortland County, and Dr. C. L. Squire, Chemung County. Fourth District, Dr. F. H. Moyer, Livingston County, and Dr. W. H. Tremaine, Erie County. Fifth District, Dr. H. Van Hoevenberg, Ulster County, and Dr. J. W. S. Gouley, New York County. The President appointed Dr. D. Colvin, of Wayne County, member of the Nominating Committee at large.

The minutes were approved. The Association then adjourned to two o'clock P. M.

Afternoon Session.

The meeting was called to order at 2 P. M. by the President.

The entire afternoon was devoted to the reading and discussion of papers.

Dr. Arnold moved that the paper of Dr. Flint and the discussion thereon be made a special order of business for the evening session. Carried.

The Association adjourned, to meet at 7 P. M.

Evening Session.

The meeting was called to order at 7 P. M. by the President.

The President introduced to the Association Dr. Shattuck, of Boston, and Dr. Adams, of Framingham, Mass.

The reading and discussion of Dr. Flint's paper occupied the attention of the Association until 11 o'clock P. M.

The Association adjourned, to meet at 9 A. M., November 18.

C. GREEN, *Recording Secretary.*

SECOND DAY, WEDNESDAY, NOVEMBER 18, 1885.

Morning Session.

The Association was called to order at 9.15 o'clock by the President.

Dr. Ferguson made the following report: The Committee from the various Districts, which met the preceding day for the purpose of drawing up a common form of By-Laws for all the Branches, have completed their work.

The proposed form of By-Laws is recommended by all the members of the Committee present in the city, viz.: Drs. Geo. E. McDonald, H. C. Van Zandt, C. W. Brown, F. W. Ross, Geo. W. Avery, T. F. Rochester, S. S. Purple, and E. H. Squibb.

The action of the Committee was approved, and it was also recommended that the By-Laws be printed and recommended by the Association to the different Districts for adoption.

The report of the Committee on auditing the Treasurer's report was then read by Dr. Ferguson as follows :

To the New York State Medical Association :

This is to certify that the undersigned, the Committee on the Treasurer's accounts, have this day examined them, and compared them with the proper vouchers, and find the same correct in all respects.

B. L. HOVEY,
C. F. MACDONALD,
SIMEON T. CLARK,

Committee.

NEW YORK CITY, November 17, 1885.

The report of the Committee was accepted and adopted.

A communication from Dr. Richard J. Dunglison, of Philadelphia, Treasurer of the American Medical Association, relative to securing membership in that organization, was then read by the Corresponding Secretary for the information of those interested.

Dr. Ferguson then said: Mr. Chairman, the Executive Committee of the Third District Branch, in connection with the amendments to the constitution of the District Branches already reported, wish to change the time of their annual meeting from the second

Tuesday in June to the second Thursday in June. I would move, therefore, that their request go with the other proposed amendments to the constitution of the District Branches which were presented yesterday. Carried.

The report of the Delegates to the Pennsylvania State Medical Society was then read by Dr. Darwin Colvin, of Wayne County.

November 17, 1885.

Mr. President and Fellows of the New York State Medical Association:

We, the undersigned, beg leave to report that, as your delegates appointed to represent this Association at the annual meeting of the Pennsylvania Medical Society, held in the city of Scranton in May last, we attended the same, and were cordially received and hospitably entertained.

Many very interesting papers were read and discussed. During the session of the Society, telegraphic news was received that the Legislature had passed a bill forming a State Board of Health, which afforded great pleasure to the members.

On the evening before our departure for home, the Lackawanna County Medical Society, in which county lies the city of Scranton, entertained the members and delegates at an elaborate banquet at the Wyoming House. On the following day an excursion was to be given, but for obvious reasons your delegates could not attend. Your delegates earnestly urged that representatives be sent to this meeting of the Association. Respectfully submitted,

CHARLES G. POMEROY, M. D.

DARWIN COLVIN, M. D.

The Corresponding Secretary then read a letter from Mr. Andrew Carnegie. (See page 605, vol. I.)

He also followed with a communication from the American Medical Association, relating to the establishment of State Boards of Medical Examiners and Licensers, it being the draft of a proposed act for that purpose.

Upon motion of Dr. Ferguson, it was voted to refer the communication to a committee of three, to report at the morning session on Thursday.

The report of Dr. Charles C. F. Gay, delegate, was then read by the Corresponding Secretary, as follows:

To the New York State Medical Association :

As your delegate to "any Medical Society in Europe" I beg leave to report : That on my arrival in London during the latter part of June, I learned that the societies—except the Obstetrical Society—had adjourned for the summer. I attended a session of the society mentioned, and listened to the reading of a paper by Priestley on "The Sanitary Condition of the Hospitals of Russia," which was ably discussed by Duncan and others.

During my sojourn in London I made an effort, which I trust may be successful, to effect an exchange of the transactions of societies and hospitals for those of our own. I became acquainted with the editor of the Transactions of St. Bartholomew's Hospital, and made application for an exchange. The subject-matter would be referred to a committee, and, on favorable report, copies would be forwarded to our Association.

Before leaving London, I also made arrangements with Dr. Forbes Winslow to procure an exchange of transactions of other hospitals and societies. Dr. Winslow is under promise to me, if successful in his endeavor, to forward to our Association back numbers of all books he may be able to procure.

All of which is most respectfully submitted,

CHARLES C. F. GAY, *Delegate.*

The above report was accepted.

The President announced as Committee on the communication from the American Medical Association, Dr. Darwin Colvin, of Wayne County ; Dr. J. B. Andrews, of Erie County ; and Dr. T. B. Reynolds, of Saratoga County.

The President introduced to the Association Dr. Alonzo Clark, of New York City, who was received with very cordial and long-continued applause.

Dr. Beckwith, of Yale College, was also introduced to the Association.

At 11 o'clock the "Address on some of the Relations of Physiology to the Practice of Medicine" was delivered by Dr. Austin Flint, Jr.

The remainder of the morning session was occupied by the reading and discussion of papers. The minutes were then adopted, and the meeting adjourned until 2 P. M.

Afternoon Session.

There being neither the President nor a Vice-President present, at 2.30 p. m. the meeting was called to order by the Corresponding Secretary, who, upon vote, was called upon to preside over the meeting until the arrival of the President.

At 2.45 o'clock Vice-President Robb took the chair.

The chairman introduced Dr. T. R. Varick, of New Jersey, to the Association.

The afternoon session was devoted to the reading and discussion of papers.

The President, who subsequently arrived, introduced to the Association Dr. J. A. Stevens, delegate from the Medical Society of the State of Delaware.

Adjourned to 7.30 p. m.

Evening Session.

The meeting was called to order at 8 p. m., by Vice-President Robb. The session was devoted to the reading and discussion of papers.

Adjourned to 9 a. m.

C. GREEN, *Recording Secretary.*

THIRD DAY, THURSDAY, NOVEMBER 19, 1885.

Morning Session.

The meeting was called to order at 10 o'clock by the President.

Dr. Ferguson announced that the number registered, at that time, was a little over 220. He called upon those who had not registered to do so.

The Nominating Committee then made the following report :

For President.—Dr. E. M. MOORE, Monroe County.

For Vice-Presidents.—Dr. WILLIAM GILLIS, Franklin County ; Dr. HENRY C. VAN ZANDT, Schenectady County ; Dr. FREDERICK HYDE, Cortland County ; Dr. DESAULT GUERNSEY, Dutchess County.

For Member of the Council at large.—Dr. John Shrady, New York County.

For Members of the Council.—1st District, Dr. E. M. LYON,

Clinton County ; Term expires 1886. 1st District, Dr. IRA H. ABELL, Jefferson County ; Term expires 1887. 2d District, Dr. THOMAS WILSON, Columbia County ; Term expires 1887. 3d District, Dr. GEORGE W. AVERY, Chenango County ; Term expires 1886 ; Dr. F. W. ROSS, Chemung County ; Term expires 1887. 4th District, Dr. S. T. CLARKE, Niagara County ; Term expires 1887. 5th District, Dr. E. S. F. ARNOLD, New York ; Term expires 1887.

IRA H. ABELL, *Chairman*.

D. COLVIN, *Secretary*.

The report of the Nominating Committee was accepted, and on motion of Dr. Ferguson the Recording Secretary was requested to cast the ballot of the Association.

The Recording Secretary thereupon cast the ballot of the Association for the persons named in the report of the Nominating Committee.

The President then announced that, the ballots having been deposited, the persons named in the report of the Committee on Nomination are declared to be the officers.

The Corresponding Secretary reported that he had received from the Chairman of the Committee to whom was given yesterday the communication from the American Medical Association, containing a proposed draft of a uniform law to be pressed by the Profession upon the Legislatures of the various States, as follows :

To the New York State Medical Association :

Your Committee, to whom the communication from the American Medical Association was referred, beg leave to report that it is inexpedient for the Association to take any action thereon at present.

(Signed)

DARWIN COLVIN,

J. B. ANDREWS,

T. B. REYNOLDS,

Committee.

The President declared that there being no objection the report of the Committee would stand.

The "Address on Pathology" was then delivered by Dr. Edward G. Janeway. (See page 321.)

The report of the Library Committee was made by the Chairman, Dr. J. W. S. Gouley, of New York. (See page 629.)

There being no objection, the President declared that the report of the Library Committee would stand approved.

The minutes were then adopted.

Adjourned until 2 P. M.

Afternoon Session.

The meeting was called to order at 2.30 o'clock, by Dr. Darwin Colvin.

The afternoon session was devoted to the reading and discussion of papers, after which the meeting adjourned to meet at the Carnegie Laboratory at 7.30 P. M.

Evening Session.

The session was devoted to the presentation of a paper by Frederick S. Dennis, M. D., of New York County, upon "The Action of Micro-organisms upon Surgical Wounds—with Demonstrations." The lecture was profusely illustrated by specimens. At 9 P. M., the Association adjourned for the annual banquet.

FOURTH DAY, FRIDAY, NOVEMBER 20, 1885.

Morning Session.

At the Carnegie Laboratory.

The meeting was called to order at 10.15 o'clock by Dr. William Gillis.

The report of the Council was read by the Corresponding Secretary. (See page 618.)

Dr. George E. Fell, of Erie County, Treasurer of the American Society of Microscopists, gave a cordial invitation on behalf of that Society to the members of this Association to attend the next annual meeting to be held in August, 1886, at Chautauqua, New York.

The remainder of the session was devoted to the reading and discussion of papers.

The meeting adjourned until 1.30 P. M.

Afternoon Session.

At the Carnegie Laboratory.

The session was devoted to the reading of a paper by Dr. Lewis A. Sayre, of New York County, on "Spondylitis and Rotary Lat-

eral Curvature of Spine. Their proper treatment practically demonstrated with exhibition of cases." (See page 448.)

There were practical applications to several patients of the apparatus for suspension as well as of the plaster-of-Paris jacket, and also the exhibition of cases that had been under treatment resulting in great improvement or entire cure.

Upon motion of Dr. Glover C. Arnold, the Association extended to Dr. Sayre a vote of thanks.

At 4 P. M. the Association adjourned.

C. GREEN, *Recording Secretary.*

REPORTS OF THE DISTRICT BRANCHES.

FIRST DISTRICT BRANCH.

Annual Meeting.

THE first annual meeting of the Northern Branch of the New York State Medical Association was held in Library Hall, Utica, July 7, 1885. Sixty-three Fellows were registered. The meeting was called to order at 11.10 A. M., by the President, Dr. John P. Gray, who said :

“I need hardly say, gentlemen, that we cordially welcome you to the good city of Utica, the place of the first meeting of this Branch. On behalf of the Association, a majority of whom reside in Utica, I greet you warmly and sincerely. The objects of this Association are very simple, yet they are very broad and very important. To promote the honor of the profession; to promote the advancement of medical science; to keep up those relations with the medical world which, in all the States of this Union, is of the highest possible importance to us as an Association and as individuals. The times have gone by when man can rely upon himself, or when indeed he is obliged to do so. The great progress of medical science in every department, whether in scientific research, or classical instruction, or medical practice, is so decided now that men need to learn constantly from their fellows. Without this we should be going a step backward, and indeed a long step backward.

The responsibility that attaches to a physician now is not that which comes simply from what he chooses to know, but it comes from what he ought to know; from what is before him everywhere to learn from other associations and from his fellows. Therefore, as I say, without an association of this kind, without

interchange with other States and societies, we could not make that progress which lies within the line of our duty. We see that this is so prevalent a sentiment and opinion among the prominent medical men of the world, that international congresses have been established in order that the widest possible diffusion of knowledge in the profession may be given freely to all, and of such importance is this estimated that, to prepare for such an occasion, two or three years' time is required. But I need not detain you longer. You will proceed to the order of business."

The Committee on By-Laws offered a report, which by vote of the Society was provisionally adopted. It was moved by Dr. Ferguson, and seconded by Dr. Booth, that steps be taken to procure if possible uniformity in the By-Laws for all Branch Associations. With this object in view, Drs. Booth and Blumer were appointed a committee to report at the next annual meeting in New York in November.

The following papers were read: "Well-Water and its Uses," by Dr. Malek A. Southworth, of Little Falls. The paper was discussed by Dr. E. D. Ferguson.

Dr. Leroy J. Brooks, of Norwich, read a paper on "The Treatment of Hemorrhoids," in which he warmly advocated the subcutaneous injection of carbolic acid. This paper was discussed by Drs. Ferguson, Gouley, and others.

In conformity with Section 9 of the plan of organization of the District Association, a Nominating Committee was appointed by the President, upon the nomination of the Fellows present from each county. The following Executive Committee was thereafter proposed by the Nominating Committee: Lyndhurst C. Dodge, Rouse's Point, Clinton County; E. F. Edgerly, Moriah Center, Essex County; William Gillis, Fort Covington, Franklin County; Thomas McGann, Wells, Hamilton County; John P. Sharer, Little Falls, Herkimer County; Ira H. Abell, Antwerp, Jefferson County; Albert A. Joslin, Greig, Lewis County; G. Alder Blumer, Utica, Oneida County; Byron DeWitt, Oswego, Oswego County; G. L. Sutton, Massena, St. Lawrence County; James Ferguson, Glens Falls, Warren County. This was a re-appointment of the old committee.

The meeting hereupon adjourned to luncheon as the guests of the Managers, and Dr. John P. Gray, at the State Lunatic Asylum.

In the afternoon session a paper was read by Dr. William A. Hall, of Fulton, on "Extra-Uterine Pregnancy," and discussed by Drs. E. M. Moore, of Rochester, Stephen Smith, of New York, and R. N. Cooley, of Oswego. Dr. Stephen Smith, of New York, read a paper on "Anchylosis of the Knee-Joint as a Remedy for Extreme Paralysis of the Leg due to Infantile Paralysis." This paper was discussed at length by Drs. Moore, J. H. Hinton, Wallace Clarke, and others.

Dr. Ferguson read a paper prepared by Dr. Austin Flint, on "Innocuous Conditions giving rise to Mitral Systolic Murmur." The paper was discussed by Drs. Moore, Hinton, and Ferguson.

Dr. M. M. Bagg, of Utica, read a paper on the "Advantages of Paris as a place of Medical Education."

Dr. Wallace Clarke, of Utica, then read a paper on "Jaborandi and its Uses in Typhoid Fever."

The following resolutions were offered by Dr. E. D. Ferguson and adopted :

Resolved: That the Northern Branch recommend, for purposes of convenience, that the counties of Clinton, Essex, and Warren be transferred from the first to the second district, and that the counties of Montgomery and Fulton be transferred from the second to the first district.

Also,

Resolved: That while recognizing the very complete arrangements for the first meeting of the Northern Branch Association, and the bountiful hospitality with which we have been welcomed, we can not at the same time omit to express our admiration for the general arrangement of the Utica Asylum and the manifestly humane and highly scientific character of its administration. After our visit to its wards it is apparent to us that this institution is worthy of the position it has long held under the superintendency of Dr. John P. Gray, as the representative asylum of America, in whose wards so many men whose names are now known the world over in the treatment of insanity received their special training for their life work.

As members of the medical profession of the State of New York, we are proud of the history and standing of the New York State Asylum.

Dr. Gray responded to the latter resolution in suitable terms.

After resolutions of thanks to the Commissioners of Common Schools for placing Library Hall at the service of the Association, and to the officers of the asylum, had been passed, the Association adjourned to meet at Little Falls, the second Tuesday in July, 1886.

The meeting was in all respects a successful one, and argues well for the prosperity of the Association in the first district.

JOHN P. GRAY, *President*.

WILBUR H. BOOTH, *Secretary*.

EXECUTIVE COMMITTEE.

The first meeting of the Executive Committee of the First Branch was held at the State Lunatic Asylum, Utica, May 28, 1885. The President, Dr. J. P. Gray, in the chair.

Present, Drs. J. P. Gray, Ira H. Abell, J. P. Sharer, Albert A. Joslin, Wilbur H. Booth, and G. A. Blumer. Dr. E. D. Ferguson, of Troy, was present by invitation.

The chairman stated that the object of the meeting was to perfect the organization of the Branch and arrange for the first annual meeting, and upon request Dr. Ferguson explained the plan of organization of the District Branches, and suggested measures proper to be taken to complete the organization and to prepare for the first annual meeting.

The appointment by the President of Dr. Wilbur H. Booth as Secretary, in place of Dr. Porter, resigned, was then confirmed, and on motion of Dr. Abell the Secretary was authorized to act as Treasurer also.

On motion of Dr. Booth the Chairman was authorized to appoint a Committee on By-Laws, and Drs. Abell, Blumer, Booth, and Joslin were appointed.

On motion, an assessment of one dollar to be levied on each Fellow present at the annual meeting was voted.

The Chairman then, on resolution, appointed Drs. Bagg, Blumer, Booth, and Clark, of Utica, and Dr. Flandrau, of Rome, to be the Committee of Arrangements, with power to add to their number.

For what seemed to the Committee valid reasons, it was then unanimously voted to hold the first annual meeting on July 7th, instead of July 14th, as was named in the plan of organization.

After further consultation as to the details connected with the Branch work, the Committee adjourned.

WILBUR H. BOOTH, *Secretary*.

SECOND DISTRICT BRANCH.

Annual Meeting.

THE first annual meeting of the Second Branch was held at the United States Hotel, Saratoga Springs, June 23, 1885, and was called to order by the President, Dr. William H. Robb, at 10 A. M.

There were present and registered forty-eight Fellows and delegates.

Dr. R. C. McEwen, Chairman of the Committee of Arrangements, welcomed the Association to Saratoga Springs in an eloquent and cordial greeting, "to those who had been led to sever the ties of other days in the maintenance of a professional position older than codes and born of individual self-respect . . . that in assembling together we may strengthen the bonds that unite us to a State Association, and manifest in the work before us a spirit that will honor the occasion, and prove a binding stone in the arch of the professional temple whose foundations have been so carefully and so permanently laid."

The President then read the annual address.

The By-Laws, reported from the Executive Committee by Dr. Van Zandt, were then provisionally adopted, and Dr. Van Zandt and the Secretary were constituted a committee to confer with other committees from the other Branches on a common form of By-Laws.

The Nominating Committee was then selected, the Fellows present from each county designating one member, and the Committee, on the re-assembling of the Association, recommended that the present Executive Committee be re-elected, which report was accepted and adopted.

The following papers were then read: "Gynæcological Notes," by Dr. Samuel Peters, of Albany County.

"Commercial Prescriptions," by Dr. H. C. Van Zandt, of Schenectady County.

"A Case of Foreign Body in the Right Bronchus, with Expulsion after nearly Ten Months," by Dr. E. D. Ferguson, of Rensselaer County.

"Atrophy of the Left Optic Nerve, with Absence of Light Perception for Three Years ; Subsequent Improvement and Useful Vision," by Dr. H. E. Mitchell, of Rensselaer County.

"Pelvic Hæmatocele, its Diagnosis and Treatment," by Dr. W. Wotkyns Seymour, of Rensselaer County.

"A Case of Enterolith, with Specimen," by Dr. W. B. Sabin, of Albany County.

"Pneumonia and its Treatment," by D. J. P. Garrish, of New York County.

"A Disputed Diagnosis," by Dr. J. C. Hannon, of Rensselaer County.

Each paper was carefully prepared and critically discussed ; but, no provision having been made for properly reporting the remarks of the speakers, the meeting can only express its regret for the omission.

The dinner provided by the Fellows of Saratoga County was in every sense a success, and was thoroughly enjoyed by the Fellows and guests ; and the Second District Branch entered on what it is hoped will prove to be a prosperous and useful career.

WM. H. ROBB, *President*.

GEO. E. McDONALD, *Secretary*.

EXECUTIVE COMMITTEE.

The first meeting of the Executive Committee of the Second District Branch was held at the Worden House, Saratoga Springs, February 10, 1885, at 2 P. M.

Present Drs. W. H. Robb (Chairman), T. B. Reynolds, R. H. Sabin, Robert Selden, M. H. Burton, H. C. Van Zandt, and Geo. E. McDonald (Secretary).

By invitation, Drs. E. D. Ferguson and R. C. McEwen were present, and participated in the discussions.

By request of the Chairman the Secretary stated the object of the meeting, and also read the proceedings of the Fifth District Committee, held in Brooklyn, January 21, 1885.

It was moved by Dr. Van Zandt and carried that a Committee on By-Laws be appointed by the Chairman.

Dr. Van Zandt was appointed a committee of one.

By resolution the Chairman was requested to appoint a Committee of Arrangements, and he appointed Drs. R. C. McEwen and T. B. Reynolds, with power to add to their number.

Dr. Selden moved that a Committee on Scientific Contributions be appointed, to be composed of one member from each county in the district. Carried.

Dr. Van Zandt moved that a committee to be known as the Special Committee of Arrangements be appointed by the Chairman, the duties of the committee being to obtain the titles of the various papers to be presented at the annual meeting; to arrange the order of the reading of the papers; to specify the papers to be read in full and those to be read by title; and to notify each and every Fellow of the subjects of all papers to be read, in order that the discussions may be more interesting and instructive by reason of an opportunity being given for preparation. Carried. Drs. Sabin, Selden, and McDonald were appointed such committee.

By resolution the Secretary was empowered to make such disbursements as to him may seem necessary to further the interests of the Branch. The bills to be paid on approval of the Executive Committee from the funds accruing from an assessment to be made at the annual meeting of the District Association.

Upon motion of Dr. Sabin the Secretary was made the Treasurer of the Branch.

Upon motion of Dr. Van Zandt, the whole Executive Committee was constituted a Committee on New Fellowship.

By resolution the Secretary was authorized to send an account of the proceedings of the Executive Committee to each of the District Secretaries, and that they be requested to return the favor.

Upon motion of Dr. Van Zandt, the Chairman was authorized to appoint Delegates to the other District Branches.

By motion of Dr. Selden the next meeting of the Executive Committee was appointed to be held at Given's Hotel, Schenectady, on April 28, 1885, at 1 P. M.

The Committee then adjourned.

GEO. E. McDONALD, *Secretary*.

An adjourned meeting of the Executive Committee of the Second District was held at Given's Hotel, Schenectady, April 28, 1885, at 1 P. M.

Present, Drs. Robb (Chairman), Blake, Burton, Graves, Van Zandt, Wilson, Selden, Sabin, Reynolds, and McDonald.

The minutes of the former meeting were read and approved.

Dr. Reynolds called the attention of the Committee to a circular addressed to the Fellows of the First and Second Districts by Dr. Ferguson, Corresponding Secretary of the State Association, in which it was recommended that Clinton, Essex, and Warren Counties be taken from the First and added to the Second District, and Fulton and Montgomery be taken from the Second and added to the First District. By resolution of Dr. Reynolds, the change was recommended to the favorable consideration of the Second District Association at its annual meeting.

Dr. Van Zandt, the Committee of One on By-Laws, recommended that the By-Laws of the State Association, with such alterations and modifications as would adapt them to a Branch Association, be adopted as the provisional By-Laws of the Second District. Adopted.

Dr. Van Zandt was authorized to have the requisite number of copies of the modified By-Laws printed for presentation at the first annual meeting of the District Association.

The Chairman then announced the following Delegates to other Branches: Drs. T. P. Bailey, J. W. Moore, J. C. Benham, Isaac de Zouche, George Conklin, D. Ayres, A. T. Rulison, C. S. Allen, R. B. Bontecou, M. H. Burton, H. E. Mitchell, Z. Rousseau, C. S. Grant, T. B. Reynolds, S. G. De La Mater, William Hagadorn. Dr. E. D. Ferguson was appointed a Delegate-at-large to all the Branches.

Upon motion, the Chairman appointed Drs. Reynolds, Graves, and McDonald the Committee on Registration.

The Chairman then appointed the following Committee on Scientific Contributions, called for by a resolution passed at the former meeting: Drs. A. T. Van Vranken, H. Lyle Smith, C. R. Blake, R. Selden, S. H. French, E. D. Ferguson, R. C. McEwen, A. Ennis, H. F. Kingsley, and F. J. Hines.

Upon motion of Dr. Reynolds it was decided to hold the first annual meeting at the United States Hotel, Saratoga Springs.

The session to begin at 10 A. M., and to close with a dinner at 4 P. M.

After approval of the minutes, it was voted to adjourn to the time of the annual meeting.

GEO. E. McDONALD, *Secretary*.

At a meeting of the Executive Committee held at Saratoga Springs, at the close of the annual meeting of the District Association, June 23, 1885, there being present Drs. Robb (Chairman), R. H. Sabin, T. B. Reynolds, H. C. Van Zandt, R. Selden, M. H. Burton, and George E. McDonald,

On motion, Dr. George E. McDonald was re-elected Secretary, and Troy was selected as the place of meeting for the second annual session of the District Association.

GEO. E. McDONALD, *Secretary*.

THIRD DISTRICT BRANCH.

Annual Meeting.

THE first annual meeting of the Third District Branch was held at the Empire House, in Syracuse, June 9, 1885, at 10 A. M.

The Committee of Arrangements through their chairman, Dr. Didama, extended a cordial welcome to the Fellows of the Association, and announced the programme for the session.

Seventy names of Fellows and Delegates were enrolled as in attendance at this meeting.

The reports of the Executive Committee and the Committee on By-Laws were received and accepted.

An address entitled "Reciprocal Relations of the Medical Profession to the State, to Corporations, and to the Individual," was delivered by the President, Dr. J. G. Orton, of Binghamton.

Drs. Ross, Avery, and Hendricks were then appointed a Committee to confer with the other Branches on a common form of By-Laws.

A paper "On the Varying Degree of Severity of Symptoms in Strangulated Inguinal Hernia," was presented by Dr. Frederick Hyde, of Cortland, and was discussed by Dr. J. W. S. Gouley, of

New York city, Dr. E. D. Ferguson, of Troy, Dr. J. Kneeland, of South Onondaga, and Dr. H. O. Jewett, of Cortland.

"A Puzzling Case of Abdominal Tumor" was reported by Dr. W. W. Munson, of Otisco. Discussed by Drs. Gouley and Kneeland.

The Committee on Nominations was then appointed.

By invitation of the Committee of Arrangements, the Association adjourned at 1 p. m. and enjoyed a sumptuous banquet at the Empire Hotel.

Afternoon Session.

The Committee on Nominations reported the following as the new Executive Committee : Dr. C. B. Richards, Broome County ; Dr. W. R. Laird, Cayuga County ; Dr. G. W. Avery, Chenango County ; Dr. F. W. Ross, Chemung County ; Dr. H. O. Jewett, Cortland County ; Dr. O. M. Allaben, Delaware County ; Dr. A. D. Head, Onondaga County ; Dr. Gilbert Birdsall, Madison County ; Dr. J. R. Leaming, Otsego County ; Dr. B. T. Smelzer, Schuyler County ; Dr. Elias Lester, Seneca County ; Dr. R. W. Eastman, Tioga County ; Dr. J. M. Farrington, Tompkins County.

On motion these were duly elected.

Dr. H. D. Didama, of Syracuse, read a paper entitled "Tubercular Consumption, never inherited always produced." Discussed by Dr. F. W. Ross, of Elmira, Dr. H. E. Allison, of Waterloo, Dr. A. J. Dallas, of Syracuse, Dr. H. O. Jewett, of Cortland, Dr. J. M. Farrington, of Trumansburg, Dr. Ely Van de Warker, of Syracuse, and by Drs. Gouley and Hyde.

Dr. F. W. Ross, of Elmira, presented a paper on the "Operation for Deviated Septum Nasi."

Dr. F. W. Putnam, of Binghamton, read a paper on "Recent Advances in Dermatological Therapeutics," and presented many rare specimens of drugs and remedies for inspection.

Dr. H. L. Elsner, of Syracuse, next presented a paper entitled "Typhoid Fever as seen in Central New York." Discussed by Dr. Charles W. Brown, of Elmira.

Dr. C. L. Squire, of Elmira, offered a paper on "Swing Suspension in Cases of Deformed Spine," and exhibited an ingenious apparatus which he had devised for the accomplishment of this purpose.

Dr. C. F. Macdonald, of Auburn, read a paper on "Puerperal Insanity."

The President appointed a Committee on Publication, consisting of the Secretary, Dr. J. H. Chittenden, of Binghamton, and Dr. T. A. Wales, of Elmira.

Dr. Ross, of Elmira, offered a resolution in behalf of the non-resident Fellows of the Association, extending their cordial thanks for the courteous reception that had been accorded them by the members of the profession of Syracuse. This was unanimously adopted.

The first session was then declared adjourned.

J. G. ORTON, *President*.

C. W. BROWN, *Secretary*.

[By agreement of the new Executive Committee at the time of the annual meeting, Dr. C. W. Brown was continued as Secretary and Treasurer, and Binghamton was designated as the place for holding the second annual meeting.—C. W. BROWN, *Secretary*.]

EXECUTIVE COMMITTEE.

The first meeting of the Executive Committee of the Third District of the New York State Medical Association was held in Dr. J. G. Orton's office, Binghamton, on Thursday afternoon, February 19th, the President, Dr. Orton, in the chair. The members present were Drs. Chittenden and Orton, of Binghamton; Dr. George W. Avery, of Norwich, Chenango County; Dr. H. C. Hendrick, Cortland County; Dr. R. W. Eastman, Owego, and Drs. F. W. Ross and Charles W. Brown, Elmira.

The Secretary read a report of the proceedings of the Executive Committee of the Fifth District, held in Brooklyn, January 21st. The vacancy in the Executive Committee caused by the removal of Dr. J. Dunn, of Seneca County, to another district, was filled by the appointment of Dr. E. Lester, of Seneca Falls. A motion was carried that a committee of three be appointed as a Committee on By-Laws. The Chairman appointed as such committee Drs. Ross, Avery, and Hendricks.

The following were appointed as a Committee of Arrangements for the June meeting at Syracuse: Drs. H. D. Didama, Ely Van de Warker, Alex. J. Dallas, George W. Cook, Syracuse; G. W.

Earl, Skaneateles; and Charles W. Brown, Elmira. The President and Secretary were appointed a Committee on Scientific Contributions. Delegates were appointed to the American Medical Association and the four District Associations. The Committee adjourned, to meet in Syracuse Monday evening, June 8th.

CHAS. W. BROWN, *Secretary*.

The second meeting of the Executive Committee of the Third District Branch was held in Dr. Didama's office in Syracuse, June 8th, at 8 p. m., the President, Dr. J. G. Orton, in the chair.

Members present: Drs. J. H. Chittenden, Wm. R. Laird, Geo. W. Avery, F. W. Ross, J. K. Leaning, B. T. Smelzer, Wm. Fitch, E. Lester, and the Secretary.

Dr. E. D. Ferguson, Secretary of the State Association, being present, was invited to take part in the meeting.

The matter of defraying the expenses of the Branch Associations was brought up and thoroughly discussed.

Motion carried that the Committee of Registration collect an assessment of fifty cents from each member registering.

On motion, the Secretary was authorized to act as Treasurer of the Branch Association.

On motion, adjourned.

CHAS. W. BROWN, *Secretary*.

FOURTH DISTRICT BRANCH.

Annual Meeting.

THE first annual meeting of this Branch was held in the City Hall at Rochester, Tuesday, May 12, 1885.

The meeting was called to order at 10 a. m., by the President, Dr. J. C. Greene, Erie County.

The Secretary read the minutes of a meeting of the Executive Committee held in Buffalo, in January, 1885, preliminary to this regular meeting.

The President delivered the opening address to the Association.

The following committees were then announced by the President :

Committee on Registration: Dr. Jameson, Steuben County ; Dr. Thornton, *ex officio*, Erie County. *Committee on Scientific Contributions*: Dr. Hovey, Monroe County ; Dr. Briggs, Erie County ; Dr. Rogers, Chautauqua County. *Committee on Transportation*: Dr. Richard Moore, Monroe County.

Professor E. M. Moore, who had been appointed by the Executive Committee on Arrangements, with power, reported that the Committee had arranged for a session of one day, a morning and afternoon meeting, to be held in the chamber of the Common Council. The report was accepted.

The Committee on By-Laws asked for further time for the purpose of conferring with the other Branches for a common form, which was granted.

The Committee on Scientific Contributions reported that the following papers were before the Association for consideration :

"A Series of Experiments upon Dislocation, made upon the Cadaver." Dr. E. M. Moore, Rochester.

"Report of a Case of Convulsions." Dr. E. M. Moore, Jr., Rochester.

"Report of a Case of Opium-Poisoning." Dr. R. M. Moore, Rochester.

"Fracture of the Skull." Dr. W. S. Tremaine, Buffalo.

"Catheterization." Dr. U. C. Lynde, Buffalo.

"Conditions predisposing to Tuberculosis in Bone." Dr. Roswell Park, Buffalo.

"Albuminuric Retinitis in the First Month of Pregnancy." Dr. R. J. Menzie, Caledonia.

"Antipyrine." Dr. W. S. Fuller, Monroe County.

Dr. R. M. Moore's paper, "Report of a Case of Opium-Poisoning," was discussed at length by Dr. Ferguson, of Troy, Dr. Stockton, Dr. Rochester, Dr. Gouley, of New York, Dr. Ring, and Dr. Pomeroy.

Dr. Fuller being absent, his paper on "Antipyrine" was read by Dr. R. M. Moore, and was discussed by Dr. Buckley and Dr. Stockton.

Dr. W. S. Tremaine's paper, "Fracture of the Skull," was discussed by Drs. Gouley, R. Mott Moore, Hovey, Lynde, and Colver.

Dr. Roswell Park's paper on "Conditions predisposing to Tuberculosis in Bone" was discussed by Dr. Tremaine and Dr. Fell.

At this point in the proceedings Dr. Gouley was called upon, and addressed the meeting at considerable length in reference to the work of the State Association, and more especially in reference to the organization of a Library by the State Association, to be situated in New York city.

Upon motion of Dr. Hovey, the President re-appointed the existing Executive Committee for the ensuing year.

Upon motion of Dr. E. M. Moore, a tax of one dollar was levied upon each member present to defray the expenses of the meeting and of the Association during the interval before the next meeting.

Dr. E. M. Moore moved that Dr. Wm. H. Thornton be appointed Treasurer of the Association. The motion was seconded by Dr. Tremaine, and carried.

The President appointed the following Delegates to the meetings of the Branches of the Association :

To the Third, or Central Branch meeting, at Syracuse, Dr. W. S. Tremaine, Buffalo ; Dr. S. T. Clark, Lockport ; Dr. J. H. Allen, Gorham ; Dr. J. N. Arnold, Clyde.

To the First, or Northern Branch meeting, at Utica, Dr. B. L. Hovey, Rochester ; Dr. A. P. Maine, Webster ; Dr. E. M. Moore, Rochester ; Dr. J. C. Greene, Buffalo.

To the Fifth, or Southern Branch meeting, at Poughkeepsie, Dr. S. S. Green, Buffalo.

Upon motion, the President was given power to add to this list of delegates at any time prior to the meetings.

The meeting then resumed the scientific programme, and Dr. Lynde read his paper upon "Catheterization."

This subject was discussed in a very interesting way by Dr. Gouley, who exhibited during the course of his remarks a number of novel instruments used in the treatment of urethral diseases, made of aluminum bronze. The discussion was closed by Dr. Lynde.

Dr. Menzie's paper upon "Albuminuric Retinitis in the First Month of Pregnancy" was next in order.

Dr. E. M. Moore, Jr., then read a "Report of a Case of Convulsions," which was discussed by Drs. Lynde and Chittenden.

The last paper upon the programme was by Dr. E. M. Moore, upon "A Series of Experiments upon Dislocation, made upon the Cadaver."

After Dr. Moore had read his paper Dr. Gouley expressed the hope that Dr. Moore would present it at the November meeting, in New York. He was very cordially seconded by Dr. Tremaine and Dr. Ferguson.

The Treasurer reported that he had collected \$39.

Upon motion of Dr. Hovey the Association adjourned, to meet in Buffalo one year from this date.

There were present during the meeting sixty-three Fellows and Delegates.

JOS. C. GREENE, *President.*

WM. H. THORNTON, *Secretary.*

EXECUTIVE COMMITTEE.

The first meeting of the Executive Committee of the Fourth District was held in January, 1885, at the Genesee House, Buffalo.

The President announced the resignation of Dr. Thomas D. Strong, of Westfield, as Secretary, which was accepted, and Dr. William H. Thornton, of Buffalo, elected in his stead.

The President and Secretary were appointed a committee to draft and send out to the members of the medical profession in the Fourth District a printed notice inviting all physicians who were willing to sign the Constitution and By-Laws of the State Association to be present at the meeting of the Branch, May 12th, in Rochester.

Dr. E. M. Moore was appointed Committee of Arrangements for the meeting in Rochester, with power.

It was moved and carried that the President appoint a Committee to draw up By-Laws for the Branch, to be presented at the meeting May 12th.

The President appointed as such Committee Drs. Rochester, Andrews, and Tremaine, of Buffalo; Dr. Strong, of Westfield, and Dr. Oliver, of Penn Yan.

The meeting then adjourned.

WILLIAM H. THORNTON, *Secretary.*

FIFTH DISTRICT BRANCH.

Scientific Meeting.

THE first special meeting of the Fifth District Branch was held in Brooklyn, at the Clarendon Hotel, on Wednesday, February 25, 1885.

The President, Dr. J. C. Hutchison, in the chair.

Meeting called to order at 2.40 P. M., when the President made a few introductory remarks.

The Chair appointed Drs. Rushmore and Govan to act with the Secretary as the Registration Committee.

Dr. J. W. S. Gouley then read his "Note on Contracture of the Bladder consequent on Cystitis."

Dr. E. R. Squibb said that he had not heard mention by the reader of any use being made of tincture of chloride of iron in such cases. In the "United States Pharmacopœia" of 1870, the formula contained a slight excess of nitric acid which developed a nitrous ether by standing. This was beneficial in these bladder affections. The freshly made tincture was allowed to stand for six months to one year before using. In the "Pharmacopœia" of 1880, the directions are to expel the excess of nitric acid. By this means the vinous character is lost. This new preparation, if allowed to stand for the same length of time, is found to be very little changed.

With regard to the benefit derived from hyoseyamin, used *internally*, it is difficult to see how its full benefit can be obtained administered in that way, as it splits up so easily. In fact, most of the like alkaloids are so unstable that the slightest alteration of conditions readily splits the molecule. Here, then, it is hard to understand how splitting up can be avoided when in contact with the gastric secretions. Hyoseyamus, however, has marked therapeutical value. It is the psychological straight-jacket now used very largely in the insane asylums, as the only allowable means of restraint. As shown in these institutions, the hypodermatic use of the alkaloid is the only sure way.

Dr. I. E. Taylor had only seen hysterical cases of this bladder affection. He noticed that the reader had not spoken of ulceration of the bladder, and mentioned a case he had seen of a spas-

modic condition of the bladder due to a small fissure. Whenever this spot was irritated, immediately a spasmodic action took place. These are ordinarily and wrongly called cases of vaginismus and erroneously treated therefor.

Dr. Robert Newman spoke of the obscurity of these cases when the primary cause was in the spinal cord, as the lumbar plexus partly controlled the bladder. Pyelitis was another obscure cause. In these cases, a microscopical examination should be made of the urine, and a close observation made of the epithelial cells there present. Dr. Newman relies on hot water and extract belladonna in these bladder troubles.

Dr. R. C. Van Wyck, of Dutchess County, said that he had treated a case of cystitis of malarial origin.

Dr. J. D. Rushmore spoke of cases not mentioned by the reader where polyuria was the irritating cause. In these, the treatment should be directed to the kidney.

Dr. Gouley then closed the discussion by answering the points brought out by the above Fellows. He had used the tincture of chloride of iron continuously, but had never been aware that he was not getting the same tincture lately as of old. He never used the popular novelty, dialysed iron, and resorted to the spiritus etheris nitrosi only sparingly. He did not believe in goading the kidneys, and hence his caution. As to ulceration of the bladder, he maintained that it was not often seen. In what is called malarial cystitis, the urine is loaded with uric acid when the patient is the subject of malarial fever. The uric acid is formed in the very pelvis of the kidney. In these cases the malaria is the remote, the uric acid the irritating, cause.

Another popular fallacy was that there were atony and atrophy of the bladder. He had not been able to find a single case of so-called atony without hypertrophy of the bladder.

Dr. Austin Flint next presented an interesting and unusual specimen of aneurism, in which both the ascending and descending portions of the arch of the aorta were very much enlarged. The tumor encroached upon the trachea. He gave the main points in the history of the case. The most remarkable incident of the case was the total absence of bruit. The patient died during one of the periodic spasms of the air-passages to which he was subject.

Dr. Austin Flint, Jr., said this case was very interesting physiologically. In his experiments on animals, when he had carefully laid bare the recurrent laryngeal nerves and made compression on them, the same phenomena were exhibited as when seized by the throat. Ordinarily we attribute the feeling manifested when seized by the throat to a compression of the trachea, but it is probably due to the compression on the recurrent laryngeal nerve. In the above case, then, it would seem that the spasms were due to the pressure on this nerve by the tumor.

Dr. C. A. Leale mentioned that he had had a case of rupture of an aneurismal sac into the trachea in a similar locality to the case under discussion.

Dr. Van Wyck asked whether there was any fibrin in the aorta, if not, he thought that this fact might be the cause for the absence of murmur.

Dr. Frank Little, of Brooklyn, who was found to be present and who was one of the physicians in charge of the case, was invited to speak. He said he had nothing to add to the statement of the case made by Dr. Flint except that the patient was forty-three years old, and that there was no fibrin or coagulum of any kind present post mortem.

Dr. E. R. Squibb then read his paper on "Oleate of Cocaine."

The President opened the discussion by saying that he greatly deplored the loss of the prospect of this oleate being used as a local anæsthetic endermically, as stated by the reader. The mucous surfaces evidently were the only localities to be relied upon.

By request, the reader gave his explanation (furnished on a previous occasion) of the action of its anæsthetic effect on the local parts, namely by contracting the blood-vessels of the papillæ, thereby driving out the blood, producing the same effect as extreme cold or heat. Dr. Gouley corroborated the views of Dr. Hutchison.

Dr. Austin Flint, Jr., suggested, in order to study the effects of this alkaloid and its salts, the expediency of carrying on a series of physiological experiments on animals by denuding the nerves and observing the effect of applying the cocaine salts.

Dr. Rushmore had tried a sample of the oleate, and came to the same conclusion as the reader, inasmuch as he had noticed no really anæsthetic effect.

Drs. Husted and Wyckoff, the other readers announced for the day, were not present, both being confined to the house by sickness.

The Secretary then read the following telegram from Dr. T. R. Varick, of Jersey City, New Jersey, which was ordered to be entered on the minutes: "Circumstances have arisen which will prevent me from meeting with your Association this p. m. With congratulations on your brilliant prospects and regrets for my enforced absence, I remain, yours, etc., T. R. VARICK."

The meeting adjourned at 6 p. m. to a collation served in an adjoining room.

The register showed that forty Fellows were present.

E. H. SQUIBB, *Secretary*.

The second special meeting of the Fifth Branch was held at the Morgan House, Poughkeepsie, on Tuesday, May 19, 1885, and was called to order at 3 p. m., by Dr. S. S. Purple, temporary Chairman of the Executive Committee.

On motion of Dr. Purple, Dr. J. G. Porteous, Chairman of the Committee of Arrangements, was chosen Chairman in the unavoidable absence of the President.

The minutes of the last special meeting were read and adopted, the discussions being omitted in the reading by request.

Drs. J. H. Hinton and P. B. Porter were appointed to act with the Secretary as a Registration Committee.

Dr. J. D. Bryant read a paper on "Three Cases of Ligation of the External Carotid; in two of which both vessels were tied simultaneously." The interest in the subject was increased by the exhibition of diagrams.

After remarks by Drs. George Wieber, J. W. S. Gouley, J. H. Hinton, T. H. Manley, and others, the discussion was closed by Dr. Bryant.

In order to give an opportunity for all to contribute, Dr. Govan, at this time, moved that an assessment of one dollar be made on each Fellow present, as recommended by the Executive Committee, to defray the expenses incurred up to date. Carried.

Dr. Gouley moved that delegates be not assessed. Carried.

Dr. S. J. Murray then read a paper on "Diphtheria, and its Treatment by Calomel," which was discussed by Drs. A. I. Car-

roll, S. S. Green, E. Barnes, William Govan, T. H. Manley, P. B. Porter, I. P. Oberndorfer, E. R. Squibb, and C. S. Wood, the discussion being closed by Dr. Murray.

Dr. R. C. Van Wyck then read a paper on "Treatment of Cerebral Hæmorrhage and Embolism by the Internal Use of Carbonate of Ammonia."

Dr. T. B. Reynolds, of Saratoga Springs, delegate from the Second District, in behalf of his district extended a cordial invitation to the Fellows of the Fifth District to attend the annual meeting of the Second District, at Saratoga Springs, on June 23, 1885.

The Chairman thanked Dr. Reynolds and the Second District Branch for the kind invitation, and, in behalf of the Fifth District Branch, accepted.

Dr. C. S. Wood then read a report of a case of "Rheumatic Metastasis to the Brain ending fatally."

The report of the Delegates to the Fourth District Branch being asked for, Dr. Gouley reported verbally that the meeting was very successful. It occupied the whole day, some good work was done, and all seemed to show a marked interest in the meeting, at which there were sixty-five Fellows in attendance.

The Secretary then read the following telegram from Dr. Ferguson: "I regret that I am detained as a witness in a law-suit. The duty at Poughkeepsie would be much more congenial and, I believe, more profitable."

The Secretary then reported from the Executive Committee the following: "Resolved, that the By-Laws of the New York County Medical Association be adopted for the present, after making the wording therein apply to the Branch Association as substitutions." The Secretary remarked that barring corrections and in some places entire expunging of parts, as well as substitutions, it is probable that all the Branches will be governed by the same By-Laws. There seemed to be no reason why they should not be. The suggestion would be made to the State Association at its next annual meeting.

The resolution was adopted as the sense of the meeting.

The Secretary then read Section 15 of the District Constitution, and said, "With regard to the assessment now being made, the Executive Committee are aware that it is hardly a just tax on

those present to pay for expenses that should be borne by the whole Branch, but that at present it was expedient to abide by the existing provision till a change could be made by the parent Association. There are at the present time one hundred and seventy-six active Fellows in our Branch, and if an assessment were now made on all the Fellows, whether present or not, the amount necessary from each Fellow would be only twenty-three cents. That would be an extremely moderate assessment; whereas by our present assessment of one dollar there are barely enough Fellows present to cover the total expenses. If this one dollar was assessed on each Fellow in the District, it would last us for months. The amount might be made fifty cents, and be a great gain, as by such an arrangement money matters would not have to come up at every meeting, but be merely looked after and settled by the Executive Committee. This matter should be brought before the parent Association."

Dr. J. G. Porteous then read a paper on "Hypertrophy of the Prostate Gland," which was discussed by Drs. J. W. S. Gouley and Robert Newman.

Dr. Govan announced that \$37 had been collected.

The meeting then adjourned at 6.20 P. M., after the Chairman had announced that the next meeting would be the annual, and would be held in Brooklyn, on October 13, 1885.

There were present thirty-five Fellows, two Delegates, and four invited guests.

E. R. SQUIBB, *Secretary*.

Annual Meeting.

The first annual meeting of the Fifth District Branch was held in Brooklyn, at the Mansion House, on Tuesday, October 13, 1885.

It was called to order at 11.30 A. M., by the President, Dr. J. C. Hutchison. The proceedings were opened by a few appropriate remarks from the President. The minutes of the last meeting were read and approved. The President then appointed the following Nominating Committee: Dr. John Young, of Dutchess County; Dr. R. Newman, of New York County; vacancy in Putnam County; Dr. F. U. Johnston, of Richmond County; Dr. W. D. Woodend, of Suffolk County; Dr. P. D. B. Hoornbeck of Ulster County; Dr. W. McCollom, of Kings County; Dr. J. H. Hunt, of Orange County; Dr. Edwin Webb, of Queens County;

Dr. William Govan, of Rockland County ; Dr. Isaac Purdy, of Sullivan County ; Dr. E. F. Brush, of Westchester County ; and directed them to report at the afternoon session.

The report of the Executive Committee was then read and approved. Reports of Delegates to other Branches being called for, Dr. Govan was the only Fellow present who had attended the meetings. He reported from the Second District Branch, that it was a very good meeting and he was well received. The scientific business was then taken up.

As Dr. Flint had requested to have his subject brought forward later in the day, the President called upon Dr. Robert Newman to read his paper on the "Progress of Electrolysis in Surgery."

It was fully discussed by Professor Pancoast, of Philadelphia, Dr. T. M. Rochester, and the reader.

Dr. William Govan next read his "Report of a Case of a Railroad Accident," and also reported a "Case of Poisoning by Anilin Oil." The latter was discussed by the Chair, Professor Pancoast, Drs. C. S. Wood, J. D. Rushmore, and E. H. Squibb.

Dr. W. H. Thayer having sent a letter of regret at not being able to read his contribution, for the reason that he had been called out of the State, the President suggested that his paper should be read by title and the request be made that it be published in some medical journal. The title was "Further Observations on Diphtheria."

The business of the morning session being completed, the meeting was adjourned for luncheon at 12.45 P. M.

The afternoon session was called to order by the President at 2.05 P. M.

Dr. Austin Flint read his "Suggestions in regard to the Causation and Treatment of Acute Coryza."

A discussion by Drs. Wyckoff, Brush, Hutchison, Porter, Professor Pancoast, and the author followed.

Dr. William McCollom next read by invitation some "Notes on an Obscure Case of Pulmonary Disease."

Dr. Flint followed with lucid and interesting comments.

As Dr. H. A. Pooler had begged to be excused from reading his paper on account of a severe cold, stating that the paper had been all worked up and hoping to read it at some future meeting,

the President introduced Professor W. H. Pancoast, of Philadelphia, who made some "Remarks on Surgical Practice and some Points of Surgical Anatomy." His very interesting remarks were illustrated with surgical instruments and accompanying plates.

Dr. J. P. Garrish expressed his great pleasure at listening to the able remarks of Professor Pancoast, and offered a vote of thanks for the Branch. Dr. Gouley, in seconding Dr. Garrish's motion, spoke at some length on various points of the subjects treated.

Drs. Garrish, Newman, and Hutchison also entered into the discussion, which was closed by Professor Pancoast. The motion was then put and carried unanimously.

Dr. Garrish's paper was next called for, but he begged to be excused as the hour was late. He said he would take pleasure in reading it at a future meeting.

Under the head of New Business, it was moved that, in accordance with the recommendation of the Executive Committee, a Committee of Three be appointed by this Branch to act with a similar committee from the other four Branches to adopt a common form of By-Laws for all the Branches. Carried unanimously.

It was next moved that an amendment to the Constitution be recommended, changing the date of the annual meeting to the fourth Tuesday in May, as the present month (October) is too near the time of the annual meeting of the parent Association.

Dr. Gouley amended by moving to put this matter in the hands of the Committee of Three on Common By-Laws. Carried as amended.

Next, the proposed amendment to Section 15 of the Constitution was brought up, as recommended by the Executive Committee. It was unanimously recommended that Section 15 should read as follows :

There shall be no initiation fees or dues ; but a small assessment shall be required of each Fellow, sufficient to defray the necessary expenses of the meetings. The amount and the manner of collecting this assessment shall be determined by the Executive Committee, provided it does not exceed one dollar for such Fellow for any one current year.

Dr. Govan then reported that \$17.50 had been collected 35 assessments. The report was accepted.

The President appointed as the Committee of Three on Common By-Laws : Dr. William Govan, of Rockland County ; Dr. S. S. Purple, of New York County ; and E. H. Squibb, of Kings County.

The report of the Nominating Committee was then read as follows :

The Nominating Committee met, according to instructions, and nominated the following gentlemen as an Executive Committee for the Fifth District : Dr. John Young, of Dutchess County ; Dr. William McCollom, of Kings County ; Dr. P. B. Porter, of New York County ; Dr. William Eager, of Orange County ; vacant, Putnam County ; Dr. Edwin Webb, of Queens County ; Dr. F. U. Johnston, of Richmond County ; Dr. William Govan, of Rockland County ; Dr. W. D. Woodend, of Suffolk County ; Dr. Isaac Purdy, of Sullivan County ; Dr. H. Van Hoevenberg, of Ulster County ; Dr. N. C. Husted, of Westchester County.

JOHN YOUNG, M. D., *Chairman.*

E. F. BRUSH, *Secretary.*

The recommendation of the Executive Committee to hold the next special meeting in Yonkers, on the second Tuesday in March, 1886, was changed to the fourth Tuesday, and then adopted.

The meeting then adjourned at 5 P. M.

The register showed thirty-nine Fellows and one invited guest to be present.

J. C. HUTCHISON, *President.*

E. H. SQUIBB, *Secretary.*

EXECUTIVE COMMITTEE.

The first meeting of the Executive Committee of the Fifth District Branch was held on Wednesday, January 21, 1885, at 130 Hicks Street, Brooklyn, at 2.30 P. M. Present : Drs. J. C. Hutchison, Chairman ; Wm. Govan, W. B. Eager, N. C. Husted, S. S. Purple, R. M. Wyckoff, John Young, E. H. Squibb, and, by invitation, Drs. J. W. S. Gouley and J. H. Hinton.

Upon the request of the Chair, Dr. Gouley made some explanatory remarks upon the duties of the Committee and the manner by which the most good could be accomplished for the Association and its influence could be most widely spread.

After which the following resolutions of Dr. Govan to increase the number of Fellows of the New York State Medical Association in the Fifth District were unanimously carried :

(1) The Secretary of the Southern Branch of the New York State Medical Association shall be in frequent correspondence with the members of the Executive Committee from each of the twelve counties in the District.

(2) The Secretary shall supply each member of the Executive Committee with blank forms of application for fellowship.

(3) The Secretary shall request each member of the Executive Committee to examine carefully the list of Fellows in his own county, and compare it with the catalogue of physicians which has been sent to him, in order that he may know the names of those who have already been appointed, and also of those who are and who are not eligible.

(4) The Secretary also should suggest that each member of the Executive Committee see personally, whenever practicable, those physicians who may be eligible, and that, in default thereof, he write to the Fellow residing nearest to the physician about to be proposed, forwarding to the former a blank application, with the request to have it properly filled by the applicant. The Fellow should then countersign the application, and send it, together with the initiation-fee, to the member of the Executive Committee, who, after indorsing it, shall mail it and the initiation-fee to the President of the Branch Association for his approval or disapproval.

Dr. Govan also moved that the Secretary be requested to send the proceedings of the Executive Committee to the Secretaries of each of the other four District Branches, with the request that they reciprocate. Carried.

At the suggestion of the Secretary, Dr. Eager offered a resolution that the Secretary be empowered to use the mails freely in relation to the business of the Branch, not only as before directed, but with regard to voting on all minor questions to be settled by the Executive Committee, and that he be directed to preserve such correspondence as vouchers for his actions on the questions in hand and for inspection at the call of the Committee.

Dr. Govan moved that the Secretary be authorized to incur such small expenses as may be necessary for expediting the busi-

ness of his office, to be subject, however, to a final approval by the Executive Committee previous to the assessment-levy on the members of the Branch. Carried unanimously.

The Secretary read a communication from Dr. A. L. Carroll, of Richmond County, regretting his absence from the meeting, and fearing his ability to be present at the meetings of the Executive Committee, owing to confining duties in the State Health Board.

Dr. Wyckoff moved that the Secretary correspond with Dr. Carroll and urge him to reconsider the matter, and impress upon him the fact that his duties would not be arduous nor the meetings very frequent, but that, if Dr. Carroll still insisted upon retiring, Dr. F. U. Johnston, of New Brighton, Richmond County, be appointed to fill the vacancy. Carried unanimously.

Dr. Eager moved that a committee of two be appointed as a Committee on By-Laws.

The Chair appointed Drs. Wyckoff and Purple.

Dr. Purple moved that the President, Secretary, and Dr. Wyckoff, be appointed as an executive portion of a Committee of Arrangements, with power to add to their number. The Chair immediately added, from members of the Branch, Drs. W. H. Thayer, J. D. Rushmore, and G. W. Baker, all of Kings County.

Dr. Eager moved that the whole Executive Committee constitute a Committee on New Fellowships, and also on Scientific Contributions.

The Executive Committee appointed the following delegates to the other four District Branches :

Drs. Gouley, Hinton, Husted, and Purple, to each of the four District Branches.

Drs. Govan, Hutchison, and Wyckoff, to the Second District Branch.

The President and Secretary were authorized to appoint delegates to fill vacancies to the other District Branches.

No objections being made, the above appointments as members of the four committees and as delegates stood approved.

At the suggestion of the Chair, and approved by the Executive Committee, the time of the first special meeting was fixed for the fourth Wednesday (25th) of February, 1885, at 2 P. M., in Brooklyn.

For this special meeting the Chair was promised papers from Drs. Gouley, Husted, Purple, and Wyckoff.

The meeting was then adjourned, subject to the call of the President.

E. H. SQUIBB, *Secretary*.

A meeting of the Executive Committee was held at the Morgan House, Poughkeepsie, on Tuesday, May 19, 1885, and in the absence of the Chairman, Dr. Hutchison, was called to order by the Secretary at 2.20 P. M. Present : Drs. W. B. Eager, Wm. Govan, P. D. B. Hoornbeck, S. S. Purple, and E. H. Squibb.

Dr. J. W. S. Gouley was present by invitation.

On motion, Dr. Purple was chosen temporary Chairman. The Secretary read the minutes of the preliminary meetings at the Murray Hill Hotel, New York city, November 18 and 20, 1884. These were approved.

The minutes of the meeting held on January 21, 1885, were then read and adopted.

The Secretary reported the failure to get a meeting of the committee called for March 12, 1885, and also the result of the vote by mail on the resolution to hold a meeting at Poughkeepsie.

The Secretary then remarked as follows : "It was the intention of the President and Secretary to call a meeting of the Executive Committee at the time of the last special meeting of the Branch ; but, there being no quorum present, the necessary business could not be transacted, and since then only a small part has been accomplished by mail. In this connection it may be well to state that the President and Secretary propose to make these committee meetings as infrequent as practicable, in order not to inconvenience the Fellows any more than is necessary ; therefore it is well to take advantage each time of a Branch meeting, and, provided a quorum be present, to then transact the accumulated business.

"Members of the Committee will please bear this in mind, as in furthering this plan themselves they will save their valuable time and the inconvenience of meeting unnecessarily often."

These remarks were ordered to be spread on the minutes.

Dr. A. L. Carroll's resignation was read and accepted.

Dr. F. U. Johnston's acceptance as member of the Executive Committee was read and approved.

Dr. G. W. Murdock's resignation was read and accepted.

The Secretary read copies of the minutes of the meetings of the Executive Committees of the Second and Third Branches.

The report of the Committee of Arrangements of the last special meeting in Brooklyn was read and adopted.

A report from the Committee on By-Laws being called for, Dr. Purple stated that he had no formal report to make, but simply recommended that the By-Laws of the New York County Medical Association be adopted for the present, after making such verbal substitutions as may be necessary.

This recommendation was adopted and the committee discharged. The Secretary was directed to make the necessary substitutions and corrections.

Dr. J. S. Andrews was appointed a delegate to the Second District Branch.

The matter of assessment at this meeting was then brought up. The Secretary then read Section 15 of the Constitution of the Branches, and stated that his expenses to date had been \$39.40. This necessitated action at this meeting, particularly as no assessment was made at the last meeting. After some discussion it was voted that an assessment of one dollar be made upon each Fellow present. The Secretary further suggested that it would be well for this Committee to consider some more equitable plan of assessment, and submit it to the parent Association at its next annual meeting as an amendment to Section 15 of the Constitution of the Branches. After further remarks the sense of the Committee seemed to be in favor of seriously considering the subject at the next meeting, owing to want of time at present.

It was then moved, seconded, and adopted, that the next meeting be the annual meeting, to be held in Brooklyn on October 13, 1885.

Adjourned.

E. H. SQUIBB, *Secretary*.

A meeting of the Executive Committee was held in Brooklyn, at the Mansion House, on Tuesday, October 13th, 1885. The meeting was called to order by the Chairman, Dr. J. C. Hutchison, at 10.15 A. M.

Present : Drs. J. C. Hutchison, Wm. Govan, F. U. Johnston, S. S. Purple, R. M. Wyckoff, John Young, and E. H. Squibb.

After approval of the minutes of the last meeting, the result of a vote on the appointment of a Committee of Arrangements for the Annual Meeting was announced by the Secretary.

The report of the Committee of Arrangements was read, approved, and adopted.

Report of the Committee of Arrangements.

In behalf of this Committee for this Annual Meeting, I beg leave to report that, after looking up the available halls for this meeting, it was decided to secure this one in the Mansion House as the most desirable, particularly as the proprietor offered it at \$10.

E. H. SQUIBB, *Secretary.*

Then a report of a contribution to the current fund was read and accepted.

Contribution to Current Fund.

BROOKLYN, September 11, 1885.

Whereas, There is at present in the Secretary's hands a balance of \$9.50 paid by Fellows residing in Brooklyn toward defraying the expenses of the collation at the first special meeting of the Branch held in Brooklyn, February 25, 1885, and

Whereas, Such surplus was not needed to defray the expenses of the above, be it

Resolved, That we, the duly authorized sub-committee of the Committee of Arrangements for that meeting, hereby direct the Secretary to pass the above-named sum to the credit of the Branch, to be used as the current fund.

J. D. RUSHMORE, *Chairman.*

J. C. HUTCHISON,

R. M. WYCKOFF,

E. H. SQUIBB, *Sub-Committee.*

Here the Chairman stated that, in the proceedings following, approval would be understood unless objection should be made by a member of the Committee.

The Secretary then stated that Dr. W. G. Russell had been added, by request, to the delegates to the Second District Branch.

The report was made of having received notices of the Annual Meetings of all the other four Branches.

The next business was, on motion, after preliminary explanation, to appoint a Committee from this Branch to meet a corresponding Committee from the other four Branches to adopt a common form of By-Laws for all. It was moved to recommend to the general meeting that the President should appoint a committee of three to so act.

The Secretary presented his expense account to the Committee for inspection, and the President appointed Dr. Purple to examine the Secretary's cash-book. Dr. Purple reported that the total expenses had been \$64.65, and the receipts \$46.50, leaving a balance due of \$18.15. It was then moved and adopted, that at this meeting an assessment of fifty cents be made on all members present to defray the expenses.

The Secretary then reported that he had altered the By-Laws of the New York County Medical Association as directed, to adapt them to this Branch for temporary use. He presented the amended By-Laws, and explained the main changes.

The next business was the adoption of the recommendation to amend Section 15 of the Constitution of the Branch Associations in regard to assessments.

It was then proposed that the next special meeting be held in Yonkers on the second Tuesday in March, 1886.

There being no new business before the Committee, it adjourned.

E. H. SQUIBB, *Secretary.*

NEW YORK COUNTY MEDICAL ASSOCIATION.

Annual Report.

Dr. Charles A. Leale, the President of the Association, reported that the nine meetings required by the By-Laws had been regularly held, and that the time had been wholly occupied by work pertaining to the science and practice of medicine.

He said that the Fellows had endeavored to labor with the one faith of the medical profession throughout the world, with a general desire to do the greatest good, and that, with united firmness, they had sacrificed self-interests, when necessary, for conscience;

striving hard to elevate the profession, and to more closely cement that international bond of union, and continue in force the commandments of our fathers which so long have proved to have been the barrier against ignorance, charlatanism, and avarice.

Dr. Leale then presented the summary of the work done, as follows :

Dr. E. G. Janeway read a paper on "Asiatic Cholera." (Discussed by Dr. William Detmold, Dr. S. S. Purple, and Dr. John Dwyer.)

Dr. E. G. Janeway presented specimens illustrating the intestinal lesions of mild typhoid fever, taken from a person who died from other causes.

Dr. Theodore R. Varick read a paper on "The Protective Treatment of Open Wounds." (Discussed by Dr. William Detmold, Dr. C. S. Wood, and Dr. C. A. Leale.)

Dr. John Shrady read a paper on the "Ætiology of Still-Births." (Discussed by Dr. E. G. Janeway, Dr. T. H. Manley, Dr. S. T. Hubbard, Dr. F. A. McGuire, Dr. I. F. Oberndorfer, Dr. Jacob Hartmann, Dr. William T. White, Dr. C. S. Wood, Dr. A. Buchanan, Dr. S. B. W. McLeod, Dr. J. R. MacGregor, and Dr. C. A. Leale.)

By invitation, Dr. Charles A. Doremus exhibited a "New and Simple Apparatus for the Determination of the Quantity of Urea in the Urine." (Discussed by Dr. Austin Flint, Jr.)

Dr. E. G. Janeway presented rare pathological specimens of perforating ulcer of the œsophagus, and also of obstruction of the trachea (previously stenosed by enlarged glands), where a cheesy mass becoming loosened had lodged in the trachea at the seat of an ulceration above the bifurcation, and caused death by asphyxia.

(Remarks by Dr. Austin Flint and Dr. C. A. Leale, citing cases of perforating ulcers of the œsophagus, caused by the pressure of aneurisms, which, upon rupturing, caused sudden death by hæmorrhage and asphyxia.)

Dr. J. Lewis Smith read a paper on "Incontinence of Urine." (Discussed by Dr. William Detmold, Dr. J. W. S. Gouley, Dr. E. G. Janeway, Dr. F. V. White, Dr. C. S. Wood, and Dr. P. B. Porter.)

Dr. E. G. Janeway presented the following pathological specimens :

1. A distended and dilated appendix vermiformis, produced by occlusion at its mouth.

2. Cystic degeneration of the endometrium from atresia of the os uteri.

3. Extensive colloid cancer of the stomach, involving all the four coats, and almost the entire extent of the organ.

Dr. E. G. Janeway read a paper on the "Advances in the Study of the *Ætiology of Disease*," and presented specimens of ulcerative endocarditis, and of abscess of the liver.

Dr. H. M. Biggs gave a demonstration of the three comma bacillus.

Dr. Austin Flint, Jr., at the request of Dr. William H. Greene, of Philadelphia, exhibited an apparatus for determining the proportion of urea in the urine, with remarks and illustrations, claiming for it advantages superior to those possessed by the apparatus exhibited by Dr. C. A. Doremus at a previous meeting.

Dr. C. A. Leale exhibited and demonstrated the use of a newly devised "Curt Myers" incandescent electric lamp, for illuminating the dark cavities of the human body.

Dr. John Shrady, at the request of the author, read a paper entitled "Practical Remarks on Rupture of the Perinæum." By Dr. Frank Hastings Hamilton. (Discussed by Dr. Isaac E. Taylor and Dr. John Shrady, and extemporaneously defended in full by Dr. Hamilton.)

Dr. Austin Flint read a paper on "Persistent Flatness over the Liver," as a proof that acute diffuse peritonitis is not associated with intestinal or gastric perforation, and cited an illustrative case where Dr. Flint's diagnosis had been verified at the necropsy. (Confirmed by Dr. J. W. Elliot, the attending physician, and discussed by Dr. D. Brown.)

Dr. Charles S. Wood read a paper on "Intussusception of the Intestines," with the report of a case of recovery, after inflammatory adhesions and sloughing. The case was treated by the judicious use of opiates, proper nutrition, and rest, without resorting to heroic surgical means.

Dr. Charles A. Leale demonstrated a method for the direct local treatment of diseases of the entire length of the colon, and in the region of the ileo-cæcal valve, and also for the safe removal of impactions of the intestines below or above the cæcum, by

means of hydrostatic pressure from the fountain syringe and of flushing the parts with warm water, citing the history of a case of puerperal peritonitis, where the accumulated intestinal flatus threatened death by pressure on the diaphragm, heart and lungs. Relief was accomplished by the introduction into the rectum of a cylindrical glass speculum, and after washing out the colon, inserting along the intestinal canal a pliable india-rubber tube fifty-nine and a half inches—the end of the tube he felt convinced passed through the ileo-cæcal valve—no apparent irritation was produced. The accumulated flatus in the small intestines passed through the tube, the greatly distended abdomen was relieved, and recovery of the patient followed.

Dr. H. M. Biggs presented a rare specimen, showing abundant vegetations on the four valves of the heart, and likewise exhibited a female bladder containing a large calculus.

Dr. Frederic S. Dennis read a paper on "Fractures of the Patella," with illustrative cases, and presented a number of patients with useful joints, after compound and compound comminuted fractures of the patella. The knee-joints had been freely opened, and the blood clots washed out, the fragments had been wired, the wounds of the soft parts drained and united by sutures, and the limbs had been placed in the plaster-of-Paris casing, all having been treated aseptically.

(Discussed by invited guests Dr. G. R. Fowler, Dr. J. H. H. Burge, of Brooklyn, and Dr. J. Forné, of the French Navy.)

Dr. H. M. Biggs gave demonstrations of cultures of the micro-organisms of osteo-myelitis.

Dr. C. A. Leale read a paper on the "Micro-Organisms of the Prehistoric Age," illustrated by a section of stone prepared for microscopic examination by Dr. P. C. Cole, showing nummulites from the foundation stone of Cleopatra's Needle at Central Park, removed from Egypt to New York in 1880.

Dr. P. B. Porter read a description of a new instrument, a *serre nœud*, devised by Dr. J. Forné, of the French Navy, an invited guest present.

Dr. J. W. S. Gouley demonstrated the uses of the *serre nœud* of Dr. Forné and believed it to be a desirable instrument.

Dr. J. W. S. Gouley presented life size photographs of pathological specimens, taken while the specimens were immersed

in water, clearly demonstrating certain conditions of the bladder, prostate and urethra, beautifully showing by this method the accurate delineations of the photograph.

Dr. Austin Flint read a paper on the "Elements of Prognosis in Bright's Disease," which expressed opinions of great practical importance, not only to the medical, but also to the legal profession, and which from the clearness of statement and the result of ripe experience must prove a valuable contribution to medical jurisprudence.

(Dr. Flint's paper was discussed by Dr. G. L. Peabody, Dr. E. G. Janeway, Dr. E. M. Moore, Dr. C. S. Wood, Dr. T. R. Varick, Dr. I. P. Oberndorfer, Dr. H. F. Quackenbos, and others.)

Dr. E. G. Janeway presented a pigmented spleen, and recent typhoidal ulcerations of the intestinal glands, removed from a woman dying shortly after childbirth. The woman had been delivered by forceps at a public institution, and had subsequently had fever and mania. The unusual opportunity of being able to exclude puerperal fever as a cause of death in such cases was highly appreciated.

Dr. Leale then presented the following list of the officers and executive committee of the New York County Medical Association for 1885 :

President, Charles A. Leale, M. D.

Vice-President, Edward G. Janeway, M. D.

Recording Secretary, P. Brynberg Porter, M. D., 22 West 31st Street.

Corresponding Secretary, John Shrady, M. D., 66 West 126th Street.

Treasurer, E. S. F. Arnold, M. D., 53 West 38th Street.

Elected Members of the Executive Committee, William Young, M. D., term expires in 1886 ; Austin Flint, Jr., M. D., term expires in 1887 ; John W. S. Gouley, M. D., term expires in 1888 ; William T. White, M. D., term expires in 1889.

FORMATION OF DISTRICT MEDICAL ASSOCIATIONS OR BRANCH ASSOCIATIONS IN NEW YORK COUNTY.

Dr. Leale also remarked that in consequence of the vast extent of territory (now containing over a million and a quarter of inhabitants) covered by the New York County Medical Association,

it was suggested by Dr. J. W. S. Gouley that District Medical Associations, or branches of the New York County Medical Association, be formed to facilitate local meetings.

This was accomplished after much labor on the part of Dr. Gouley and others, and now the usefulness of such organizations to the central body was practically demonstrated.

The rules and regulations of these city District Medical Associations were carefully prepared, printed, and distributed to the members, and are as follows, printed copies being herewith submitted :

CONSTITUTION OF THE DISTRICT MEDICAL ASSOCIATIONS
OR BRANCHES OF THE NEW YORK COUNTY MEDICAL
ASSOCIATION. ADOPTED FEBRUARY, 1885.

SECTION 1.—*Organization.*

There shall be organized in the City and County of New York seventeen District Medical Associations as Branches of the New York County Medical Association, whose objects shall be the same as those of the County Association.

SECTION 2.—*Designation.*

The District Associations shall be designated respectively as the First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth, Sixteenth, and Seventeenth District Association or Branch of the New York County Medical Association.

SECTION 3.—*Boundaries.*

The boundaries of the several Districts shall be as follows:

First District—1st, 2d, 3d, 4th, 5th, and 6th Wards.

Second District—7th, 10th, and 13th Wards.

Third District—8th and 14th Wards.

Fourth District—9th and 15th Wards.

Fifth District—11th and 17th Wards.

Sixth District—16th Ward.

Seventh District—18th Ward.

Eighth District—19th Ward, South of East 59th Street.

Ninth District—20th Ward.

Tenth District—21st Ward.

Eleventh District—22d Ward, South of West 59th Street.

Twelfth District—22d Ward, North of West 59th Street, and 12th Ward, South of West 110th Street.

Thirteenth District—12th Ward, South of East 110th Street, and 19th Ward, North of East 59th Street, including Ward's and Blackwell's Islands.

Fourteenth District—12th Ward, North of 110th Street, East and West, and South of 130th Street, including Randall's Island.

Fifteenth District—12th Ward, North of 130th Street.

Sixteenth District—23d Ward, including Riker's Island.

Seventeenth District—24th Ward.

SECTION 4.—*Composition.*

Each District Association shall be composed of those members of the New York County Medical Association who reside within the boundaries of the District. With the approval of the Executive Committee any physician who is eligible to membership may be invited to take part in the scientific proceedings; a like invitation may be extended to members of any of the other District Associations, and to physicians who do not reside in the county.

SECTION 5.—*Officers.*

The officers of each District Association shall be a President, a Vice-President, and a Secretary, who together shall constitute the Executive Committee of the District Association.

SECTION 6.—*Election of Officers.*

Each District Association shall annually elect its own officers. For the purposes of immediate organization, the Executive Committee of the New York County Medical Association shall appoint a temporary Chairman for each District Association, who shall without delay form the Association, and call the first meeting for the election of officers and for other purposes.

SECTION 7.—*Duties of the Officers.*

The President shall perform the duties ordinarily prescribed for this officer, and in addition shall, once annually, make a report to the County Association of the scientific work done during the year by his District Association.

The Vice-President shall preside in the absence or at the request of the President.

The Secretary shall perform the duties ordinarily prescribed for this officer.

The Executive Committee shall manage the affairs of the District Association.

SECTION 8.—*Time and Place of Meeting.*

Each District Association shall meet at least once a month at the house of a member or elsewhere, as may be determined by the Executive Committee.

SECTION 9.—*Candidates for Membership of the New York County Medical Association.*

The Executive Committee of each District Association shall act as a Committee of Admissions for the New York County Medical Association, and shall carefully investigate the qualifications of candidates for membership. When a candidate is approved by this Committee, the word "approved" shall appear upon the application, and each member of the Committee shall sign his name thereto. This countersigned application shall then be forwarded, together with the annual dues (\$2), to the Secretary of the County Association.

SECTION 10.—*By-Laws.*

This plan of organization shall go into effect at once, and shall stand as the Constitution of each and every District Association; but each District Association shall make its own By-Laws, modeled, however, upon those of the New York County Medical Association.

SECTION 11.—*Amendments.*

No part of this plan of organization shall be abolished, altered, or amended, and no addition shall be made thereto, except at a regular meeting of the County Association, after due notice of such alterations, additions, amendments, or abolition shall have been given in writing by a member at the regular meeting of the County Association immediately preceding, and then only by a majority vote of three fourths of the members present and voting.

APPLICATION FOR MEMBERSHIP OF THE NEW YORK COUNTY MEDICAL ASSOCIATION.

NEW YORK,.....188
 City District.....
 P. O. Address.....

The undersigned desires to become a member of the New York County Medical Association, and subscribes to its By-Laws, which he has read and examined.

Signed.....
 A graduate of.....

in the year 18

Approved by.....

Executive Committee of the.....City District.

The members of the District Executive Committee shall scrutinize the credentials of the applicant, and, if satisfactory, approve the application and forward it to the Corresponding Secretary of the New York County Medical Association.

SUGGESTIVE GUIDES TO AID IN THE FORMATION OF OTHER
COUNTY ASSOCIATIONS.

The New York County Medical Association, during the first two years of its harmonious and prosperous existence, has had such a clear guide in the By-Laws that it may be considered appropriate to recommend to the Publication Committee to kindly print them in full in the next volume of the "Transactions of the New York State Medical Association," for the purpose of suggesting similar By-Laws, and thereby facilitate the organization of other County Medical Associations throughout the State.

A copy is herewith included.

B Y - L A W S .

ARTICLE I.—ORGANIZATION.

SECTION 1. This Association shall be called THE NEW YORK COUNTY MEDICAL ASSOCIATION.

SEC. 2. The objects of the Association shall be:

First, The cultivation of the science of Medicine.

Second, The maintenance of the honor and character of the medical profession.

Third, The promotion of public health.

SEC. 3. The Association shall consist of regular practitioners of Medicine and of regular graduates of Medicine residing in the County of New York.

SEC. 4. The officers of the Association shall be the following: 1, President; 2, Vice-President; 3, Recording Secretary; 4, Corresponding and Statistical Secretary; 5, Treasurer; 6, an Executive Committee, consisting of the titular officers of the Association, together with four additional members to be elected by the Association.

SEC. 5. The officers of the Association shall be elected by ballot at each annual meeting. They shall serve for one year, or until their successors are chosen, to whom they shall, without delay, deliver up and transfer all moneys, books, manuscripts, vouchers, and other property of the Association which may be in their possession, and take a receipt therefor. The four members of the Executive Committee shall first be elected to serve, one for one year, one for two years, one for three years, and one for four years. Afterward, one shall be elected each year to succeed the retiring member.

SEC. 6. The only standing committee shall be the Executive Committee; but special committees may be appointed from time to time when ordered by the Association.

SEC. 7. Nominations for officers and for one member of the Executive Committee to be elected at an annual meeting shall be made at the stated meeting immediately preceding each annual meeting. The Recording Secretary shall have the names of all nominees printed on slips of paper, two of which shall be sent to each member, with the notice for the annual meeting. The first officers and four members of the Executive Committee may be elected, without nomination at a previous meeting, at any meeting of the Association, and they shall serve until the annual meeting of 1885, or until their successors are chosen.

ARTICLE II.—DUTIES OF THE OFFICERS.

SECTION 1. The President shall preside at all meetings of the Association and of the Executive Committee, shall preserve order at such meetings, shall have the power to adjourn the meetings should they become disorderly, and shall appoint all special committees not otherwise ordered by resolution.

SEC. 2. The Vice-President, in the absence of or at the request of the President, shall temporarily perform the duties of the President. In case of the death, disability, or resignation of the President, the Vice-President shall perform the duties of the President until the next annual election of officers, and the Executive Committee shall fill the vacancy in the office of Vice-President.

SEC. 3. The Recording Secretary shall make and preserve accurate minutes of the meetings of the Association, and shall perform the usual duties pertaining to the office of Secretary, except those specially assigned to the Corresponding and Statistical Secretary.

SEC. 4. The Corresponding and Statistical Secretary shall conduct the official correspondence of the Association, except the issuing of notices for meetings and the notification to candidates of their election as members, shall preserve all such correspondence, including copies of official letters written by him, and shall act as Secretary of the Executive Committee.

SEC. 5. The Treasurer shall receive all moneys paid to the Association in any way and from any source, and shall dispose of the same as directed by the Executive Committee. He shall make a report to the Executive Committee of the condition of the finances of the Association, whenever directed to do so by the Committee, and shall make a full and complete report of the finances to the Association at each annual meeting.

ARTICLE III.—DUTIES OF THE EXECUTIVE COMMITTEE.

SECTION 1. The Committee shall hold regular meetings at convenient times, not more than ten and not less than five days before each stated meeting of the Association, and shall hold special meetings when called together by the President. The President shall call a special meeting of

the Committee when requested to do so in writing by five members thereof, the request specifying the object of such meeting.

SEC. 2. Five members of the Committee shall constitute a quorum.

SEC. 3. The Committee shall make suitable arrangements for the meetings of the Association, and the President, or, on the failure of the President so to do, the Committee shall provide for papers to be read and discussions to be held at the open sessions of the Association.

SEC. 4. The Committee shall authorize and direct all deposits and investments of the funds of the Association, shall order all expenditures to be made by the Treasurer, and shall audit the accounts of the Treasurer, so as to report upon the same at each annual meeting of the Association.

SEC. 5. The Committee shall report to the Association upon the names of proposed members, as provided for in the Section relating to the "Admission, Resignation, and Reinstatement of Members."

SEC. 6. The Committee shall take cognizance of any and all apparently flagrant violations of the Code of Ethics of the Association and shall act upon all charges brought by a member or members against another member or other members, as provided for in the Section relating to "Ethics, and the Discipline of Members."

SEC. 7. The Committee shall fill all vacancies in the offices of the Association, except in the office of President, and the officers so appointed shall serve until the next succeeding annual election; and the Committee shall, in the same manner, fill all vacancies that may occur in the number of members of the Committee who have been elected by the Association.

SEC. 8. The Committee shall embody in their annual report a statement of the investments and of the condition of the funds of the Association, and shall report upon the same at any stated meeting of the Association, when called upon by resolution to make such report.

SEC. 9. The Committee shall take charge of all the real and personal property now or at any future time in the possession of the Association.

SEC. 10. At each annual meeting of the Association, the Secretary of the Committee shall read, as the annual report of the Committee, its minutes for the year, except such portions thereof relating to the admission or discipline of members as are, according to the provisions of these By-Laws, of a confidential character.

ARTICLE IV.—ADMISSION, RESIGNATION, AND REINSTATEMENT OF MEMBERS.

SECTION 1. Each and every candidate for membership must make an application in writing, accompanied with his professional credentials, to the Corresponding and Statistical Secretary, which shall be presented to the Executive Committee at its next succeeding meeting. If the Committee, after due investigation, find the candidate worthy of admission to membership, they shall so report at the next stated meeting of the Association,

or at any meeting of the Association immediately following the meeting of the Committee at which they may decide favorably upon the application of the candidate. At the time of the reception of such report regarding a candidate or candidates for admission, the report may be adopted either entire or in part by the Association, or any two members may call for a ballot upon one or more of the candidates. When a ballot has been called for as herein provided, the negative votes of one fourth of the members voting shall reject a candidate.

SEC. 2. The names of all candidates to be reported upon at any stated meeting of the Association, together with the names of all candidates whose applications are before the Executive Committee, shall be printed upon the notices of such meeting sent to members.

SEC. 3. All communications received by the Executive Committee, which relate to the character and standing of candidates, shall be treated by the Committee as confidential.

SEC. 4. The Executive Committee shall not report to the Association the names of candidates whom they have decided to be unworthy of membership, unless directed to make such a report by the Association at a stated or annual meeting; and the names of candidates, when thus reported, shall not be entered upon the minutes of the Association.

SEC. 5. Each candidate for membership shall be required to sign the By-Laws and pay the initiation-fee and current annual dues and assessments within three months after his election; otherwise his election shall be null and void, unless the candidate be subsequently permitted, by a resolution of the Association, to qualify as a member by signing the By-Laws and paying the initiation-fee, dues, and assessments.

SEC. 6. Each member who has regularly qualified as such by signing the By-Laws, paying the initiation-fee, current dues and assessments, shall be entitled to receive a certificate of membership, which certificate shall be in the following form:

CERTIFICATE OF MEMBERSHIP OF THE NEW YORK COUNTY MEDICAL ASSOCIATION.

This is to certify that is a member in good standing of the NEW YORK COUNTY MEDICAL ASSOCIATION, having been duly elected at a meeting of the Association held, 18 .

....., Recording Secretary. President.
[L. S.]
New York City, 18 .

INDORSEMENT.

The person mentioned in this certificate has this day resigned his mem-

bership, and has thereby relinquished all right and title to any share in the property of the Association.

....., *Recording Secretary.*

New York City,18 .

The person mentioned in this certificate has this day been again received into full membership in the Association.

....., *Recording Secretary.*

New York City,18 .

SEC. 7. A member removing from the County or desiring to resign his membership shall send to the Recording Secretary his resignation in writing, by which act he severs his connection with the Association. If the dues and assessments of the member resigning be paid in full to the date of his resignation, the Recording Secretary shall, at the request of such member, indorse upon his certificate of membership the fact and date of the resignation and shall return the certificate so indorsed to the member, who shall then be considered as having formally resigned from the Association, and as having relinquished all right and title to any share in the property of the Association.

SEC. 8. No member shall be permitted to resign while his dues and assessments or any part thereof remain unpaid, or while he is under charges which may lead to his expulsion, unless he be permitted to resign by special resolution of the Association.

SEC. 9. Each and every resignation shall be reported by the Recording Secretary at the next succeeding stated meeting of the Association.

SEC. 10. An application for re-instatement to membership in the Association shall be submitted to and considered by the Executive Committee in the same manner as an original application for membership; except that, on the presentation of a duly authenticated certificate of former membership, together with satisfactory evidence of good professional standing during the time following the resignation of former membership, payment of the initiation-fee shall not be required when the former member is re-instated. In case of the re-instatement of a former member, the Recording Secretary shall indorse upon the certificate of former membership the fact and date of re-instatement.

SEC. 11. No former member who has been expelled or who has been dropped from membership for non-payment of dues or assessments can be re-instated according to the provisions of Section 10 of this Article; but such former member may be re-elected according to the provisions for the election of members, if his back dues and assessments be paid in full up to the date when his previous membership had ceased.

ARTICLE V.—ETHICS AND THE DISCIPLINE OF MEMBERS.

SECTION 1. The Code of Ethics of the American Medical Association shall be the Code of Ethics of this Association.

SEC. 2. The Executive Committee shall hear all complaints against a member or members, of violation of its Code of Ethics, and shall decide all questions of medical ethics submitted to them by the Association. They shall notify to appear before them any and every member against whom a charge or charges have been preferred. With the said notification to appear before them, they shall furnish to the accused member a copy of the charge or charges made against him. They shall also notify the accusing member or members to be present with the member against whom the charge or charges have been made, when the said charge or charges shall be carefully investigated. The Committee shall decide upon the said charge or charges at as early a day as practicable, and shall report their decision to the Association at the stated meeting next succeeding the day on which their decision shall have been made. In case the accused or accusing members, or both, be not present at the time appointed for the investigation, the Committee may, at their pleasure, either adjourn the investigation once, and once only, for a period not longer than one month, or they may decide upon the charge or charges at the time first appointed for the investigation, and report their decision to the Association; provided, always, that the accused member shall be entitled to one such adjournment upon his personal or written application for the same to the Committee.

SEC. 3. The Executive Committee shall investigate all apparently flagrant violations of medical ethics by a member, such as improper publications, that come to their knowledge or are brought to their notice in any way. They shall investigate such apparent violations in the same manner as provided for in Section 2 of this Article, except that it shall not be necessary that any formal charge or charges be made by a member.

SEC. 4. A charge against a member shall be made in writing, signed by the member or members making the charge, inclosed in a sealed envelope indorsed, "Charges against a member," and shall be sent to the Corresponding and Statistical Secretary, to be by him presented to the Executive Committee at its next regular or special meeting.

SEC. 5. The only kind and degree of discipline of members, except the dropping of names from the list of members for non-payment of dues and assessments, shall be expulsion from the Association.

SEC. 6. A member can be expelled only at a stated meeting of the Association, upon recommendation of such action by the Executive Committee, and then by an affirmative vote of a majority of the members present and voting.

ARTICLE VI.—DUES AND ASSESSMENTS.

SECTION 1. The annual dues for each current year, payable in advance after each annual meeting, shall be two dollars.

SEC. 2. The annual dues of members elected at the stated meetings in October, November, and December shall begin with the current year next following the date of their election as members; but such members, after signing the By-Laws, shall immediately be entitled to all the privileges of membership.

SEC. 3. The Executive Committee may, at their discretion, make an assessment or assessments upon members, such assessment or assessments not to exceed three dollars for each member for any one current year.

SEC. 4. The Treasurer, in his annual report for each year, shall read the names of all members whose dues or assessments or both for the past year are unpaid. He shall send notices to the usual addresses of such members before the next stated meeting of the Association, that they will be dropped from the list of membership unless their indebtedness to the Association be paid in full before the stated meeting in April. At the stated meeting in April in each year, the Treasurer shall read the names of those who have failed to pay their indebtedness for the past current year, and such members shall thereby forfeit their membership in the Association.

SEC. 5. Members whose dues and assessments are not fully paid shall not be candidates for any official position in the Association nor shall they be entitled to vote in its executive sessions.

ARTICLE VII.—DELEGATES TO OTHER MEDICAL ASSOCIATIONS AND SOCIETIES.

SECTION 1. All delegates to other medical associations or societies shall be appointed at the proper time and for the proper period by the Executive Committee, and the Committee shall fill all vacancies in the number of such delegates.

SEC. 2. Delegates to other medical associations or societies shall be required to carry out, in their representative capacity, the views and wishes of the Association; and such delegates shall act in strict accordance with the instructions of the Association. Any action taken by a delegate or delegates, in willful opposition to the instructions of the Association, shall render such delegate or delegates liable to expulsion from membership in the Association, under the provisions of Section 6 of the Article relating to "Ethics and the Discipline of Members."

SEC. 3. The Association may or may not, at its pleasure, instruct its delegates; but all instructions to delegates shall be in the form of a resolution or resolutions passed at an annual, stated, or special meeting.

ARTICLE VIII.—ANNUAL MEETINGS.

SECTION 1. The Annual Meeting of the Association shall be held on the third Monday in January of each year.

SEC. 2. The annual meetings shall be conducted in accordance with the rules of order of the Association, except as regards the order of business.

SEC. 3. The following shall be the order of business for the annual meetings:

- I. Reading of the minutes of the previous stated meeting.
- II. Appointment by the President of three Inspectors of Election and the declaration by the President that the poll is open for the election of officers and of a member of the Executive Committee.
- III. Report of the Executive Committee.
- IV. Report of the Treasurer.
- V. Report of special committees.
- VI. Unfinished business.
- VII. New business.
- VIII. Adjournment.

SEC. 4. The poll for the annual election shall remain open for one hour; or until every member present at the meeting has had an opportunity to vote, after which the poll shall be declared by the President to be closed and no additional votes shall be received.

SEC. 5. On the first ballot, all the officers and one member of the Executive Committee to be elected shall be voted for upon one ticket, and the said officers and member of the Executive Committee shall be elected by a majority of the votes cast.

SEC. 6. At the close of the poll, the Inspectors of Election shall immediately proceed to canvass the votes and shall, without delay, report the result of such canvass to the President, who shall then announce the result to the Association. If it should appear that no choice has been made in the case of one or more of the officers or of the member of the Executive Committee, a new balloting for such as are still to be elected shall forthwith take place, the poll for which shall be kept open until all members present have had an opportunity to vote; and such balloting shall be repeated until all the officers and the member of the Executive Committee shall be elected. At the second and at each succeeding ballot, the name of a candidate having the fewest number of votes shall be withdrawn.

SEC. 7. Ballots folded in each other, blank votes, and ballots containing a greater number of names than the number of officers and the member of the Executive Committee to be elected shall be rejected by the Inspectors.

SEC. 8. The regular order of business may proceed during balloting

and the canvass by the Inspectors, or the Association may direct that the regular order be temporarily suspended, at any time, for the purpose of facilitating the election.

SEC. 9. No member who has been recommended by the Executive Committee and elected at any annual meeting shall be permitted to vote at the same annual meeting.

SEC. 10. All the proceedings of the annual meetings shall take place in executive session.

ARTICLE IX.—STATED MEETINGS.

SECTION 1. The stated meetings of the Association shall take place on the third Monday in February, March, April, May, June, October, November, and December of each year.

SEC. 2. The following shall be the order of business for the stated meetings:

- I. Calling of the meeting to order in open session.
- II. The scientific paper or papers of the evening, with the discussions of the said paper or papers.
- III. The presentation of specimens, and voluntary communications.
- IV. Motion that the Association go into executive session.
- V. Minutes of the last meeting.
- VI. Report of the Executive Committee and the election of new members.
- VII. Report of the Treasurer.
- VIII. Report of the Corresponding and Statistical Secretary.
- IX. Reports of special committees.
- X. Unfinished business.
- XI. New business.
- XII. Adjournment.

SEC. 3. At the stated meeting in February of each year, the open session shall be devoted to an address to be delivered by the President.

SEC. 4. At the stated meeting in December of each year, nominations of officers and of the member of the Executive Committee to be elected shall be in order immediately after the reports of officers and of committees.

SEC. 5. In the open sessions of the Association, it is not intended to exclude practitioners of medicine, medical students, or other proper persons, who are not members; and the President or any member through the President may invite any one present who is not a member of the Association to participate in the discussions during the open sessions, provided that no objection be made by a member present.

SEC. 6. All persons not members of the Association shall be excluded from the meetings during the executive session.

ARTICLE X.—SPECIAL MEETINGS.

SECTION 1. At the written request of fifteen members, or at the request of the Executive Committee, the President or the Executive Committee shall call a special meeting of the Association; but in all cases the call for a special meeting and the notices to members of such meeting shall be accompanied with a statement of the object or objects of the meeting, and no business other than that so specified shall be transacted at such special meeting.

SEC. 2. Except as otherwise provided, special meetings shall be conducted in accordance with the "Rules of Order" of the Association.

ARTICLE XI.—RULES OF ORDER.

RULE 1. Fifteen members shall constitute a quorum for the transaction of business in executive session, and the presiding officer shall declare any meeting in executive session adjourned when it appears that a quorum is no longer present; but a meeting may be called to order in open session when a quorum is not present.

RULE 2. In the absence of the President and Vice-President, the meeting may elect any member present to act as President *pro tempore*.

RULE 3. When a motion is under debate, no motion shall be received except motions to adjourn, to lay on the table, for the previous question, to postpone, to refer, or to amend, which several motions shall have precedence in the order in which they are enumerated in this Rule.

RULE 4. Motions to adjourn, to lay on the table, and for the previous question, shall be decided without debate.

RULE 5. During the open sessions, a motion to go into executive session shall be in order at any time except while a member has the floor, and such motion shall be decided without debate.

RULE 6. Every member present at a meeting shall vote on all questions in executive session, unless excused from voting by the President, with the consent of the meeting.

RULE 7. The ayes and nays on any question, when called for by five members present, shall be decided without debate and recorded in full in the minutes.

RULE 8. After a question has been decided, except one of indefinite postponement, any two members who voted with the majority may, at the same or at the next stated meeting, move for a reconsideration thereof, without which no discussion of such question shall be allowed.

RULE 9. Every member shall have the right to speak once on any question under consideration, but not oftener, unless by permission of the meeting.

RULE 10. All questions of order not provided for in these Rules shall

be determined in accordance with the rules of order in Cushing's "Manual of Parliamentary Practice."

ARTICLE XII.—AMENDMENTS.

SECTION 1. Amendments, alterations, or additions to these By-Laws may be made by a two thirds vote of the members voting at an annual meeting or at any stated meeting; provided that notice of such amendments, alterations, or additions shall have been presented in writing at the stated meeting immediately preceding, and that a copy of such amendments, alterations, or additions shall have been sent to each member, with the notice for the meeting at which they are to be considered.

SEC. 2. Notice of amendments, alterations, or additions to the By-Laws may be given at any annual meeting, the same to be acted upon at the next succeeding stated meeting.

SEC. 3. These By-Laws may be temporarily suspended at any annual or stated meeting during such meeting by a three fourths vote of the members present and voting; but they shall not be suspended at any special meeting.

In conclusion, I would state that our proceedings have been printed, either in full or in part, by the best medical journals, they have therefore been preserved for collection, to be bound in permanent volumes.

Our finances are in excellent condition, there remaining a balance of over seven hundred dollars in the treasury.

There has been perfect unity of action in the Association, and its usefulness in the past and steady increase in power have clearly demonstrated the wisdom of its founders.

CHARLES A. LEALE, *President.*

ANNUAL REPORT OF THE COUNCIL,
BEING
THE MINUTES OF THE SESSIONS OF THE COUNCIL

Held during the year 1885.

THE Council met in special session at the New York State Lunatic Asylum, Utica, on July 7, 1885, at 6 P. M., and was called to order by the President, Dr. J. P. Gray.

Present: Drs. Gray, Hinton, Hyde, Colvin, Wilson, Gouley, and Ferguson.

Dr. Gouley offered a resolution that a committee of five be appointed to secure a design for an Association badge, the President of the Association to be a member of the committee. The resolution was carried, and Drs. Gouley, Gray, Wilson, Hyde, and Colvin, were appointed the committee.

On motion of Dr. Ferguson it was resolved to devote a page in future volumes of "Transactions," to be known as the obituary page, whereon should appear the names of deceased Fellows, together with such biographical facts as could be placed in tabular form.

The Secretary moved that, in interpreting the clauses of the Plan of Organization of the District Associations relating to the constitution of the Executive Committee, the District President and Secretary shall be counted when estimating a quorum of the Executive Committee. Carried.

Dr. Ferguson offered the following:

Resolved, That the Council of the New York State Medical Association respectfully recommends to the Committee of Arrangements for the International Medical Congress the following modification of the rule by which the American membership of the Congress is to be constituted, to wit:

That the American membership of the Congress be constituted of delegates, who shall be entitled to participate in the business and scientific proceedings, and of members who shall be entitled to participate only in the scientific proceedings of the Congress; that the delegates may be appointed by the American Medical Association, and by State and local organizations in affiliation therewith, in the proportion of one delegate for every ten or fraction of ten members of the organization thus represented; that members of the regular medical profession of the United States may become members of the Congress by registering their names as such and by taking out tickets of admission. Carried.

The Secretary reported on new Fellows as follows:

In accordance with Article III., Section 3, of the By-Laws, the following resolution was submitted to the Council in December, 1884:

Resolved, That the Corresponding Secretary be authorized to add to the list of Fellows the names of such applicants as are properly vouched for, and who may make application from December 1, 1884, to the publication of the forthcoming volume of "Transactions."

Fifteen replies were received from members of the Council, all voting aye. In accordance with the resolution seventy-three names were added, to appear in the volume of "Transactions."

In addition thereto the Secretary reported the names of sixty-three applicants whose applications had been received since the publication of the volume of "Transactions." The applicants being found duly accredited and qualified were all appointed to Fellowship.

The Secretary reported the following circular letter which had been addressed to the Fellows in the First and Second Districts:

NEW YORK STATE MEDICAL ASSOCIATION,
TROY, N. Y., *April*, 1885.

DEAR DOCTOR: The necessarily rapid work in the organization of our Association permitted what seems to be an error in the constitution of the First and Second Districts, due allowance not having been made for convenience of railroad communication.

The First or Northern Branch comprises the following counties, viz.: Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson, Lewis, Oneida, Oswego, St. Lawrence, Warren—11 counties.

The Second or Eastern Branch includes the following counties, viz. : Albany, Columbia, Fulton, Greene, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, Washington—10 counties.

It is manifestly unjust to expect the Fellows residing in the counties of Clinton, Essex, and Warren, to make a long journey through the Second District in order to attend their district meeting at Utica, being obliged this year to *pass through* Saratoga Springs, where the Second District meeting will be held.

Some measure of relief seems proper. I would suggest that Clinton, Essex and Warren Counties be taken from the First District and added to the Second ; while, as a compensation, Fulton and Montgomery be taken from the Second District and added to the First. Some action should be taken at the district meetings, as it will take two years to effect the change. In the mean time those Fellows in Clinton, Essex and Warren Counties who may prefer to attend the Second District meeting at Saratoga Springs, Thursday, June 23, 1885, should apply to Dr. Wilbur H. Booth, Secretary First District Branch, 172 Genesee Street, Utica, N. Y., for credentials as delegates.

Under the above indicated reconstruction the First District would comprise ten counties, and contain a population (census of 1880) of 523,870, with 77 Fellows ; and the Second District, eleven counties, with a population of 621,135 and 88 Fellows.

This communication will be sent to each Fellow in the First and Second Districts, that the matter may be fully considered before the district meetings are held.

Your obedient servant,

E. D. FERGUSON, *Corresponding Secretary.*

In accordance with the above suggestions resolutions had been introduced at the annual meetings of the First and Second District Branches recommending that Clinton, Essex, and Warren Counties be taken from the First District and added to the Second, and Fulton and Montgomery taken from the Second District and added to the First, the resolutions being unanimously carried in each instance.

It was then resolved that the Council recommend to the Association the above described changes in the boundaries of the First and Second Districts.

It was also declared to be the opinion of the Council that Section 15 of the Plan of Organization of the District Branches should be so amended as to allow the assessments to be made upon all the Fellows residing in the District, and not alone upon those attending the meetings.

On motion of the Secretary the following form of application was adopted:

APPLICATION FOR FELLOWSHIP OF THE NEW YORK STATE
MEDICAL ASSOCIATION.

Dated.....1885.

The undersigned desires to become a Fellow of the New York State Medical Association, and subscribes to its plan of organization, which he has read and examined.

Signed,.....
.....District.....Post-Office.
.....County.
.....City Residence.
A graduate of.....
.....In the year.....

I hereby recommend the above applicant for fellowship.

Approved.....
Member of the Council for the.....District.

REQUIREMENTS FOR FELLOWSHIP.

1. The applicant must be duly authorized to practice Medicine.
2. He must be in good professional standing, and a resident of the State of New York.
3. He shall fill the above blank form of application, which he shall transmit to any member of the Council of the Association residing in his county or his district, together with five dollars as his initiation-fee.
4. He shall subscribe to the Constitution and By-Laws of the Association.

On the reverse of this page will be found the list of members of the Council, and the arrangement of counties constituting the geographical districts.

When the application is completed, it is to be forwarded, together with the initiation-fee, to the Corresponding Secretary.

On the reverse are to be printed the names of members of the Council, etc., as it may be formed and constituted at the time of printing the application.

The Council then adjourned, after approving the minutes.

E. D. FERGUSON, *Secretary*.

The following report was received September 1, 1885:

Report of the Committee on the Association Badge.

To the Council of New York State Medical Association:

Your committee has the honor to recommend the adoption of the design for an Association badge, presented at the last meeting of the Council, and referred to this committee for a report.

It is proposed that the badge be worn suspended to the watch-chain or guard, as an insignium of Fellowship of the New York State Medical Association, and that Fellows of the Association be authorized to wear the badge as indicated above.

The following is a description of the design, accompanied by two engravings thereof:



Figure 1 represents the obverse of the badge, which is taken in part from the seal of the Association, and is a figure of the sun in its full effulgence, one inch and an eighth in diameter.

In the center of the badge, which shall be of gold, is inscribed the motto of the State of New York, "Excelsior," upon a background of red enamel.

Surrounding the red background are nineteen bright golden hemispheres upon a stippled ground of gold.

Upon the obverse of the loop of the badge shall be engraved a quadrilateral outline, which shall symbolize a foundation stone, and shall be the insignium of all Founders of the Association.

The insignium of Original Fellows shall be a circle, engraved also upon the obverse of the loop of the badge, and shall symbolize a transverse section of a cylindrical pillar.

The insignium of Fellows appointed after the first annual

meeting of the Association shall be a triangle, engraved likewise upon the obverse of the loop of the badge, and shall symbolize a superstructure.

Figure 2 represents the reverse of the badge.

The center of the figure of the sun contains the monogram of the Association upon a blue enamel background.

Encircling the blue enamel background is a corded line.

Around the corded line is a stippled ground of gold, upon which are inscribed the motto "Guard the Faith" and the date of foundation of the Association, 1884. On the left-hand side of this date are five hemispheres, and on the right three hemispheres.

On the reverse of the loop of the badge shall be engraved its number, which shall be in the order in which the badge is received by its rightful owner.

The colors of the Association shall be red and blue, upon a ground of gold; "red, the emblem of life, as it is so closely allied to the color of the sun and of fire, which, to the ancients, were the great life-generating, life-preserving powers in the earth; blue, the color of truth and of mercy—it should teach the wearer that mercy and truth should govern the doctor, not only in shedding the blood of his patients, but in the defense of the faith."

FURTHER EXPLANATION OF THE SYMBOLS CONTAINED IN THE BADGE.

Obverse Figure 1.—The figure of the sun, which was adopted as the seal of the Association, shall symbolize the universal science of Medicine.

Its forty-eight rays in the badge shall symbolize the forty-eight members of the medical profession who called the convention at which the Association was organized.

The nine letters of the state motto, "Excelsior," in the center of red enamel, shall symbolize the Council of nine of the Association, organized in 1883 and merged in 1884 with the present Association.

The nineteen hemispheres which surround the red center shall symbolize the present Council of nineteen.

Reverse Figure 2.—The three words of the motto, "Guard the Faith," shall symbolize the three members of the medical profes-

sion who first met together in 1883 to take measures to defend the faith.

The five letters of the monogram of the Association shall symbolize the five districts of the State.

The corded line encircling the blue enamel background of the monogram shall symbolize the bond of union of the sixty counties of the State comprised in the five districts.

The eight hemispheres, five being on the left-hand side and three on the right of the date of foundation, shall symbolize the number of titular officers of the Association.

The motto "Excelsior" suggests the first object of the Association, and implies that we should forever strive to elevate and advance the science of medicine.

This same State motto suggests the second object of the Association, and indicates that we should labor with the State to promote public health.

The motto "Guard the Faith" imposes the obligation contained in the third object of the Association, and commands that we always jealously adhere to our principles and to our Constitution and By-Laws, and that our zeal be great in the maintenance of the honor of the profession and of the one and indivisible science of Medicine.

The wearing of the badge will fulfill the fourth object of the Association, and give evidence that each individual is desirous to further the most cordial professional relations with his fellows.

Thus the four objects of the Association, together with its history and organization, are epitomized by the symbols contained in the badge.¹

JOHN W. S. GOULEY, *Chairman,*

JOHN P. GRAY,

THOMAS WILSON,

FREDERICK HYDE,

DARWIN COLVIN, *Committee.*

The following resolutions were offered by Dr. Austin Flint, Jr., and submitted in September, 1885, to each member of the Council in accordance with Article III., Section 3, of the By-Laws:

Resolved, That the Council of the New York State Medical

¹The official manufacturer of the badge, to whom all applications therefor should be made, is Mr. Charles G. Braxmar, 36 Cortlandt Street, New York city.

Association adopt the accompanying report of the special committee on the Association badge.

Resolved, That Drs. J. W. S. Gouley, J. H. Hinton, and E. D. Ferguson be authorized to make arrangements for the manufacture of the badges and for their distribution in November, 1885, and thereafter.

Resolved, That Dr. J. W. S. Gouley, as Chairman of the Badge Committee, transmit printed copies of the accompanying report, together with these resolutions, to the Fellows of the Association, requesting each Fellow to signify by the next mail if he desires to possess a badge at the time of the annual meeting in November, 1885.

These resolutions were adopted by sixteen affirmative votes, there being no vote in opposition.

E. D. FERGUSON, *Secretary*.

Annual Meeting of the Council.

The annual meeting of the Council was held at the Murray Hill Hotel, New York city, on Monday, November 16, 1885, at 8 P. M., the President in the chair.

Present : Drs. Gray, Robb, Orton, Greene, Hutchison, Green, Ferguson, Hinton, Purple, Wilson, Hyde, Van de Warker, Colvin, Gouley, and Flint, Jr.

The minutes of the last meeting were read and approved.

Dr. Flint, Jr., Chairman of the Committee on Publications, then presented his report as follows :

Report of the Committee on Publications.

The Chairman of the Committee on Publications has the honor to present the following report for the year 1884 :

The Chairman acted as the editor of the "Transactions" for 1884, which were published by Messrs. D. Appleton & Co., of New York city, in a volume of 654 pages. The "Transactions" were distributed to Fellows of the Association, and copies were sent to invited guests, to certain Medical Societies and Associations, and to certain medical journals published in the United States and in foreign countries. A detailed statement of the expenditures made on account of the "Transactions" will appear in the report of the Treasurer of the Association.

The volume of "Transactions" for 1884 was stereotyped, and one thousand copies were printed and bound. The copies not disposed of are in the custody of the Treasurer. Additional copies can be printed from the stereotype plates, in lots of one hundred or more, at an expense of from seventy to seventy-five cents per bound volume.

Certain of the papers published in the "Transactions" for 1884 appeared in the "New York Medical Journal" before the issue of the "Transactions," which were published about April 10, 1885. It is respectfully recommended that, for the future, papers belonging to the "Transactions" be not printed in medical journals anterior to the publication of the "Transactions," for the reason that it is unnecessary and inexpedient, if the "Transactions" be promptly issued, and that it impairs the freshness of the volume. In many instances, the "Transactions" failed to receive suitable critical and analytical reviews, for the reason that "the most important papers had already appeared in the medical journals."

The "Transactions" for 1884 being stereotyped, Fellows may at any time obtain reprints of their papers at a very small expense. It is also possible to correct typographical errors before the issue of another edition. Certain corrections have already been made in the plates; and Fellows are respectfully requested to send to the editor corrections of errors which may have escaped his notice.

In addition to the regular distribution of the "Transactions," in accordance with the By-Laws, your committee adopted the following notice, a copy of which accompanied each volume:

"The regular price of Volume I of the 'Transactions' is \$5.

"Fellows of the Association, not in arrears, will be supplied with copies, in addition to the copy to which each Fellow is entitled, at the rate of \$2.50 per copy, by John H. Hinton, M. D., Treasurer, 41 West Thirty-second Street, New York city.

"Fellows of the Association, not in arrears, and Fellows appointed at any time before the adjournment of the annual meeting for 1885, are entitled each to one copy of the 'Transactions' for 1884, Volume I."

AUSTIN FLINT, JR., M. D., *Chairman.*

November 16, 1885.

The report was accepted and adopted.

The Secretary reported the names of fifteen applicants for Fellowship, all of whom were appointed.

The Secretary offered certain amendments to the Constitution and By-Laws, which were approved and their presentation to the Association advised.

Attention having been called to a recent publication in "Gaillard's Medical Monthly" of a reprint from the "New York Times," giving in detail the particulars of an operation performed by Dr. Thomas H. Allen, of New York city, Dr. Allen was requested to appear before the Council and vindicate himself, which he did to the satisfaction of the Council, by the statement that the report was made by some person to him then and now unknown, his first knowledge of the report being the day following the operation.

Dr. Gouley, Chairman of the Library Committee, then reported on the present condition of the Library.

The report was accepted.

The Treasurer made his Annual Report, showing that on November 11, 1885, there was a balance to the credit of the Association of \$193.64; in the building fund, \$315; and in the library fund, \$21.63.

The report was accepted.

On motion of the Secretary, it was directed that in the future when a physician joins the Association he shall receive the volume of "Transactions" for the session of the Association preceding his joining.

It was also decided by resolution that for the assessment of dues the fiscal year shall end with the close of each annual meeting.

The Secretary offered the following:

Resolved, That the proceedings of the Executive Committees of the District Branches, together with the reports of the District Presidents, be printed in the volume of "Transactions." Carried.

The Secretary reported the present number of Fellows to be five hundred and eighty-seven.

Minutes approved. Adjourned.

E. D. FERGUSON,
Secretary of the Council.

Special Meeting of the Council.

The Council met in special session at the Murray Hill Hotel, New York city, November 19, 1885, at 4.30 P. M., the President, Dr. E. M. Moore in the Chair.

Present : Drs. Abell, Arnold, Colvin, Ferguson, Gillis, Green, Hinton, Hyde, McEwen, Moore, and Shrady.

The names of seventeen applicants, duly approved, were reported by the Secretary, and all were appointed.

The Secretary reported the names of two applicants who had not been approved.

On motion, their applications were referred to the Secretary, the applicants to be admitted if properly approved.

On motion, the Publication Committee was constituted of the members of the Council for the Fifth District, together with the Secretaries.

On motion, New York city was selected as the place, and the third Tuesday in November, 1886, as the time, for the third annual meeting of the Association.

The Secretary offered the following :

Resolved, That in the distribution of the "Transactions" hereafter, unless personally called for, the volumes be sent to each Fellow by express—transportation charges to be paid by the receiver.

The President appointed the members of the Council for the Fifth District to be the Committee of Arrangements for the next annual meeting ; and, on motion, the committee was empowered to add to its numbers.

The appointment of delegates to other medical organizations was referred to the President and Secretaries, with power.

The President appointed Drs. J. W. S. Gouley, J. H. Hinton, and E. S. F. Arnold, as the Library Committee.

The minutes were approved.

The Council adjourned.

E. D. FERGUSON, *Secretary*.

FIRST ANNUAL REPORT OF THE LIBRARY COMMITTEE OF THE NEW YORK STATE MEDICAL ASSOCIATION.

November 19, 1885.

IN accordance with the resolutions adopted by this Association on the 19th of November, 1884, measures have been taken to organize the Library, and your committee ask leave to present their first annual report.

"1. *Resolved*, That the Council of the New York State Medical Association recommends the formation of a Library, which shall be called the Library of the New York State Medical Association, and that this Library shall be placed in the city of New York.

"2. *Resolved*, That the Library shall be under the management of the Council, and that the Council be instructed to appoint a committee of three Councilors (one of whom shall act as Librarian) to be known as the Library Committee.

"3. *Resolved*, That there shall be created a Library fund, to be raised by voluntary contributions ; and that this fund shall be under the control of the Council and be placed in the hands of the Treasurer of the Association."

There was some unavoidable delay in securing suitable quarters for the Library.

They were finally obtained, at a nominal rent, through the liberality of the managers of the Carnegie Laboratory. As soon as the committee were in possession, they furnished the quarters with shelves, table, chairs, etc., and copies of the following circular letter were forwarded to all the Fellows of the Association :

NEW YORK STATE MEDICAL ASSOCIATION,
NEW YORK, *June 1, 1885.*

DEAR DOCTOR :

The great success of our State Medical Association—the fellowship having reached the number of five hundred and fourteen within the period of one year—has led me to propose that we organize a Medical Library on a large scale, and that we provide funds for the erection of a fire-proof building in which to deposit and preserve our books and hold our meetings. These propositions were received with favor at the first regular meeting of

the Association, in November, 1884. A committee, of which I have the honor to be chairman, was then appointed to carry out these propositions. As chairman of this committee, I ask leave to submit to you the provisional plans that have been formed, and to solicit your active co-operation in the undertaking.

The Library Committee has the pleasure to inform you that the Library of this Association has been opened in the Carnegie Laboratory, 338 and 340 East 26th Street, and that a number of books have already been received.

Any medical book or books or journals which you may kindly contribute will be thankfully received.

Each Fellow of the Association is asked to send, as soon as possible, to the above address, one or more books.

Old medical treatises or tracts, which often possess little value when isolated, will be of very great use if put together in a large library, and when thus collected can not fail to be of much service as works of reference to those studying and wishing to elucidate some intricate question in medicine or surgery.

Many practitioners in the various counties have inherited the libraries of several generations, and in these libraries there are many ancient books which should be preserved permanently in such a library as ours. Duplicates of modern books and journals (even odd numbers) may be sent. Due credit will be given to all donors.

Each Fellow of the Association is asked to place in the Library all of his own contributions to medical literature, whether in the form of treatises and pamphlets, or of journal articles. These are to be kept separately in the Library, and a special index of authors and subjects will be made of the essays and books. If all respond promptly, we shall be able to make an excellent exhibit at our Second Annual Meeting, in November next.

We contemplate placing our Library in a fire-proof building, but we must first collect a sufficient number of books, then there will be no great difficulty in raising a large sum of money to erect the permanent home for our Library and Association, with reading-rooms, lecture-rooms, a large auditorium for our meetings, and rooms that may be occupied by Fellows visiting the city.

We now have a temporary home and headquarters in the Library Hall of the Carnegie Laboratory, where all Fellows who come to the city may register their names and addresses, and where their friends may seek them.

In the Carnegie Laboratory our Fellows can, at any time, rent by the week private rooms, in which to make special studies in histology, pathology, and experimental medicine.

The Fellows are particularly requested to send to the Chairman of the Library Committee their photographic likenesses, imperial size, to be kept in the library album. Yours, very respectfully,

J. W. S. GOULEY, *Chairman of the Library Committee.*

All communications relating to the Library and also packages of books, journals, etc., should be directed to the Chairman of the Library Committee, Carnegie Laboratory, 338 and 340 East 26th Street, New York city.

Several hundred volumes, contributed by a few Fellows, were placed upon the shelves of the Library on the 1st of June, 1885; since that time the number of volumes has increased to three thousand four hundred and forty-eight (3,448), and more than four thousand (4,000) pamphlets have been received. These contributions came from Fellows of the Association, the Surgeons-General of the U. S. Army, Navy, and Marine-Hospital Service, the executive bodies of twenty-two State Medical Societies, from Dr. William O'Meagher, of New York, and from Messrs. D. Appleton & Co., of New York.

The following are the names of the Fellows of the Association who have contributed books to the Library:

Ira H. Abell, Jefferson Co.
 Amos Allen, Rensselaer Co.
 C. S. Allen, Rensselaer Co.
 W. L. Allen, Rensselaer Co.
 E. S. F. Arnold, New York Co.
 Glover C. Arnold, New York Co.
 M. N. Babcock, Saratoga Co.
 J. E. Beers, Tompkins Co.
 Herman M. Biggs, New York Co.
 Leroy J. Brooks, Chenango Co.
 Charles W. Brown, Chemung Co.
 Alexander Buchanan, New York Co.
 Charles Buckley, Monroe Co.
 William Chase, Chautauqua Co.
 James Chapman, Orleans Co.
 T. M. Ludlow Chrystie, New York Co.
 Simeon T. Clark, Niagara Co.
 Darwin Colvin, Wayne Co.
 William S. Conover, New York Co.
 Daniel Curtis, Orleans Co.
 Alphonse Dagenais, Erie Co.
 Byron De Witt, Oswego Co.
 Isaac De Zouche, Fulton Co.
 Henry D. Didama, Onondaga Co.
 Abram Dubois, New York Co.
 J. Stevens Elder, Madison Co.

John M. Farrington, Tompkins Co.
 George E. Fell, Erie Co.
 Everard D. Ferguson, Rensselaer Co.
 William Fitch, Tompkins Co.
 Austin Flint, New York Co.
 Austin Flint, Jr., New York Co.
 William H. Flint, New York Co.
 William Fraser, Livingston Co.
 J. Henry Furman, Westchester Co.
 William Gillis, Franklin Co.
 John W. S. Gouley, New York Co.
 John W. Gray, Livingston Co.
 Caleb Green, Cortland Co.
 De Witt C. Greene, Erie Co.
 Joseph C. Greene, Erie Co.
 Frank H. Hamilton, New York Co.
 George T. Harrison, New York Co.
 Thomas B. Heimstreet, Rensselaer Co.
 John H. Hinton, New York Co.
 Arthur L. Holden, Oneida Co.
 B. L. Hovey, Monroe Co.
 Oliver P. Hubbard, New York Co.
 August Hühne, Ulster Co.
 Joseph C. Hutchison, Kings Co.
 Frederick Hyde, Cortland Co.
 Homer O. Jewett, Cortland Co.

George H. Jones, Livingston Co.	William H. Robb, Montgomery Co.
Thomas J. Kearney, New York Co.	Thomas F. Rochester, Erie Co.
John H. Knapp, Cortland Co.	H. R. Rogers, Chautauqua Co.
Charles A. Leale, New York Co.	Augustus D. Ruggles, New York Co.
J. K. Leaning, Otsego Co.	Robert H. Sabin, Albany Co.
N. W. Leighton, Kings Co.	Lewis A. Sayre, New York Co.
William T. Lusk, New York Co.	Lewis Hall Sayre, New York Co.
U. C. Lynde, Erie Co.	O. G. Selden, Greene Co.
Carlos F. MacDonald, Cayuga Co.	Robert Selden, Greene Co.
G. C. H. Meier, New York Co.	John Shrady, New York Co.
Ramon L. Miranda, New York Co.	Samuel W. Smith, New York Co.
E. M. Moore, Monroe Co.	L. S. Sprague, Wayne Co.
George M. Palmer, Wyoming Co.	E. R. Squibb, Kings Co.
J. G. Porteous, Dutchess Co.	G. L. Sutton, St. Lawrence Co.
H. N. Porter, Oneida Co.	Isaac E. Taylor, New York Co.
P. Brynberg Porter, New York Co.	T. Gaillard Thomas, New York Co.
J. R. Preston, Saratoga Co.	R. C. Van Wyck, Dutchess Co.
William C. Pryer, Westchester Co.	Theron A. Wales, Chemung Co.
Samuel S. Purple, New York Co.	John W. Warner, New York Co.
Frederick W. Putnam, Broome Co.	Edwin Webb, Queens Co.
James Reagles, Schenectady Co.	William T. White, New York Co.
Tabor B. Reynolds, Saratoga Co.	Charles S. Wood, New York Co.

Most of the books so contributed are of a high order, and very many of them rare and valuable ; some of the most noteworthy are the works of Galen, in Latin, seven folio volumes, vellum, 1624 ; a Greek edition of Galen in two folio volumes, 1798 ; the works of Erastus, 1 vol., folio, vellum, 1590 ; the works of Fabricius ab Aquapendente, 1 folio vol., 1723 ; the works of Ficinus, 16mo, vellum, 1595 ; the School of Salernum, 12mo, 1649 ; Nuck's Anatomical and Surgical Works, vellum, 16mo, 1691 ; Hippocrates on the Humors, 8vo, Latin and Greek, Leipsic, 1745. Besides these there are numerous ancient and precious works on the various branches of medical science, in the English, French, German, Spanish, and Portuguese languages, especially in general medicine, surgery, and obstetrics, also valuable illustrated works on anatomy, pathology, obstetrics, and surgery. Among the journals may be mentioned the "Medical Repository," from 1797 to 1821 ; the "New England Journal of Medicine and Surgery," from 1812 to 1827 ; the "Medical Recorder," 1820 ; the "New York Medical Journal," from 1822 to 1828 ; the "Eclectic Repository," from 1812 to 1820 ; a full set of the "New York Journal

of Medicine"; the "New York Medical Journal," from 1864 to 1885; the "American Medical Times," the "Medical Record," the "Buffalo Medical and Surgical Journal," incomplete; the "American Journal of Medical Sciences," incomplete; the "Medical and Surgical Reporter," "Braithwaite's Retrospect"; the "British and Foreign Medico-Chirurgical Review," and others.

There is also a complete set of the "Medical Register" of the States of New York, New Jersey, and Connecticut.

Among the full sets of dictionaries and encyclopedias are the "Dictionnaire des Sciences Médicales," 60 volumes, 8vo, and the "Dictionnaire de Médecine," 30 volumes, 8vo. Two very recent gifts are worthy of special mention, viz., "Hunter on the Gravid Uterus," and a series of very excellent drawings of pathological objects, etc.

The library also contains the transactions of the following named associations and societies, although few are complete sets: Transactions of the American Medical Association, of the American Pharmaceutical Association, of the American Climatological Association, of the American Ophthalmological Society, of the American Society of Microscopists, of the medical societies of the States of Alabama, Colorado, Connecticut, Georgia, Indiana, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wisconsin; the transactions of the New York Pathological Society and of the New York Academy of Medicine; the annals of the Royal Academy of Medical Sciences, etc., of Havana, Cuba; and the annual reports of the Boards of Health of the various States.

For present purposes the books have been classified as follows: 1, Chemistry; 2, Toxicology; 3, Medical Jurisprudence; 4, Pharmacy; 5, Materia Medica; 6, Therapeutics; 7, Anatomy; 8, Physiology; 9, Histology; 10, Pathological Anatomy and Histology; 11, Hygiene; 12, State Medicine; 13, General Medicine; 14, Fevers; 15, Diseases of the Mind and Nervous System; 16, Diseases of the Chest; 17, Diseases of the Stomach and Bowels; 18, Diseases of the Skin and Syphilis; 19, Diseases of Women and Children; 20, Obstetrics; 21, Surgery and its Various Branches; 22, Medical Biography and Bibliography; 23, Publications of

the Surgeons-General of the United States Army, Navy, and Marine-Hospital Service ; 24, Transactions of Medical Societies ; 25, Reports of Medical Institutions ; 26, Annual Reports of Boards of Health ; 27, Medical Journals.

The Library Committee desire to express their sense of great obligation to Dr. E. S. F. Arnold for the valuable and efficient aid he has given in the organization of the Library and in the preparation of the catalogue.

A few Fellows have presented to the Association some obstetrical instruments and pathological specimens of great value, which they hope will form the nucleus of a museum which, like the Library, shall be the property of the Association. These instruments and specimens have already been placed in the Library Hall.

J. W. S. GOULEY, *Chairman.*

LIST OF FELLOWS,

BY DISTRICT AND COUNTY.

FIRST, OR NORTHERN DISTRICT.

CLINTON COUNTY.

- Founder. Coit,* William N. Champlain.
Founder. Dodge, Lyndhurst C. Rouse's Point.
Original. Howe, Edwin S. Saranac.
Founder. Lyon, E. M. Plattsburgh.

4

ESSEX COUNTY.

- Founder. Barton, Lyman. Willsborough.
Church, Charles A. Bloomingdale.
Original. D'Avignon, Francis J. Au Sable Forks.
Founder. Edgerly, Edward F. Moriah Centre.
Original. La Bell, Martin J. Lewis.
Original. Pollard, Abiather. Westport.
Original. Rand, Hannibal W. Keene.
Original. Rice, Isaac. Bloomingdale.
Original. Riley, Andrew W. Au Sable Forks.
Original. Robinson, Ezra A. Jay.
Founder. Sawyer, Conant. Au Sable Forks.
Original. Turner, Melvin H. Hammondsville.

12

FRANKLIN COUNTY.

- Founder. Gillis, William. Fort Covington.

1

* Deceased.

HAMILTON COUNTY.

McGann, Thomas. Wells.

1

HERKIMER COUNTY.

Douglass, A. J. Ilion.

Fox, Eli. Mohawk.

Garlock, William D. Little Falls.

Original. Glidden, Charles H. Little Falls.

Green, H. H. Paine's Hollow.

Original. Potter, Vaughn C. Starkville.

Original. Sharer, John P. Little Falls.

Original. Southworth, Mark A. Little Falls.

Original. Young, John D. Starkville.

9

JEFFERSON COUNTY.

Founder. Abell, Ira H. Antwerp.

Founder. Crowe, J. Mortimer. Watertown.

Founder. Johnson, Charles M. Watertown.

Original. Johnson, Parley, H. Adams.

Miller, J. H. Carthage.

5

LEWIS COUNTY.

Crosby, Alexander H. Lowville.

Douglass, Charles E. Constableville.

Joslin, Albert A. Greig.

Kilborn, Henry F. Croghan.

4

ONEIDA COUNTY.

Armstrong, James A. Clinton.

Original. Backus, Ogden. Utica.

Original. Bagg, Moses M. Utica.

Baker, Smith. Whitesborough.

Barnum, D. Albert. Cassville.

Original. Blumer, G. Alder. Utica.

Bond, George F. M. Utica.

Original. Booth, Wilbur H. Utica.

Original. Brush, Edward N. Utica.

Churchill, Alonzo. Utica.

- Clarke, Wallace. Utica.
 Crim, Frank D. Utica.
 Dodge, Amos P. Oneida Castle.
 Douglass, James W. Booneville.
 English, G. P. Booneville.
 Flandrau, Thomas M. Rome.
 Fraser, Jefferson C. Ava.
 Fuller, Earl D. Utica.
 Gibson, William M. Utica.
 Glass, James H. Utica.
 Founder. Gray, John P. Utica.
 Gray, John P., Jr. Utica.
 Holden, Arthur L. Utica.
 Hughes, Henry R. Clinton.
 Original. Hunt, James G. Utica.
 Kelly, John Devin. Utica.
 Kuhn, William. Rome.
 Munger, Charles. Knoxboro.
 Nelson, William H. Taberg.
 Palmer, Henry C. Utica.
 Palmer, Walter B. Utica.
 Original. Pilgrim, Charles W. Utica.
 Founder. Porter, Harry N. N. Y. Mills.
 Quin, Hamilton S. Utica.
 Reid, Christopher C. Rome.
 Russell, Charles P. Utica.
 Roberts, John L. D. N. Y. Mills.
 Spicer, Walter E. Holland Patent.
 Sutton, Richard E. Rome.
 Swartwout, Leander. Prospect.
 Tefft, Charles B. Utica.
 Wagner, Charles Gray. Utica.
 West, Joseph E. Utica.
 West, M. Calvin. Rome.

OSWEGO COUNTY.

- Bacon, Charles G. Fulton.
 Bates, Nelson W. Central Square.
 Cooley, R. N. Hannibal Centre.
 Original. De Witt, Byron. Oswego.
 Drake, D. Delos. Central Square.
 Original. Hall, William A. Fulton.

- Huntington, John W. Mexico.
 Johnson, George P. Mexico.
 Nelson, George W. Orwell.
 Todd, John B. Parish.
 Original. Tully, A. Melville. Oswego.

11

ST. LAWRENCE COUNTY.

0

WARREN COUNTY.

- Original. Barney, Charles S. Glens Falls.
 Original. Ferguson, James. Glens Falls.
 Fitz Gerald, David J. Glens Falls.
 Original. Martine, Godfrey R. Glens Falls.

4

SECOND, OR EASTERN DISTRICT.

ALBANY COUNTY.

- Founder. Bailey, Theodore P. Albany.
 Original. Hall, John E. Green Island.
 Original. Houston, David W. Cohoes.
 Original. Lyon, George E. West Troy.
 Founder. Moore, Joseph W. Cohoes.
 Founder. Peters, Samuel. Cohoes.
 Founder. Sabin, Robert H. West Troy.
 Founder. Sabin, William B. West Troy.
 Original. Van Vranken, Adam T. West Troy.

9

COLUMBIA COUNTY.

- Original. Bates, Xyris T. New Lebanon.
 Original. Benham, John C. Hudson.
 Original. Lockwood, J. W. Philmont.
 Original. Smith, H. Lyle. Hudson.
 Founder. Wilson, Thomas. Claverack.

5

FULTON COUNTY.

Original. Blake, Clarence R. Northville.
 Founder. de Zouche, Isaac. Gloversville.

2

GREENE COUNTY.

Original. Conkling, George. Durham.
 Original. Selden, O. G. Catskill.
 Original. Selden, Robert. Catskill.

3

MONTGOMERY COUNTY.

Founder. Ayres,* Alexander. Fort Plain.
 Original. Ayres, Douglas. Fort Plain.
 Original. Biggam, William H., Jr. Fort Plain.
 French, S. H. Amsterdam.
 Original. Graves, Ezra. Amsterdam.
 Original. Johnson, Richard G. Amsterdam.
 Original. Leach, H. M. Glen.
 Parr, John. Buel.
 Parsons, W. W. D. Fultonville.
 Founder. Robb, William H. Amsterdam.
 Original. Rulison, Elbert T. Amsterdam.
 Simmons, Frank E. Canajoharie.
 Smeallie, James A. Canajoharie.

13

RENSSELAER COUNTY.

Original. Allen, Amos. Grafton Centre.
 Founder. Allen, Charles S. Greenbush.
 Allen, William L. Greenbush.
 Original. Baynes, William T. Troy.
 Founder. Bonesteel, William N. Troy.
 Original. Bontecou, Reed B. Troy.
 Original. Bucklin, Daniel D. Lansingburgh.
 Founder. Burbeck, Charles H. Troy.
 Founder. Burton, Matthew H. Troy.
 Original. Cooper, William C. Troy.
 Founder. Cooper, William S. Troy.
 Original. Crombie, Walter C. Schaghticoke.
 Founder. Ferguson, Everard D. Troy.
 Founder. Finder, William. Troy.

* Deceased.

- Founder. Hannan, James C. Hoosick Falls.
 Founder. Harvie, J. B. Troy.
 Original. Heimstreet, Thomas B. Troy.
 Keith, Halbert Lyon. West Sand Lake.
 Original. Lester, Sullivan W. Troy.
 Original. McTammany, William F. Troy.
 Original. Magee, Daniel. Troy.
 Original. Magee, John. Lansingburgh.
 Marsh, James P. Troy.
 Founder. Mitchell, Howard E. Troy.
 Founder. Nichols, Calvin E. Troy.
 Founder. Nichols, William H. West Sand Lake.
 Original. Rogers, S. Frank. Troy.
 Founder. Rousseau, Zotique. Troy.
 Founder. Seymour, W. Wotkyns. Troy.
 Original. Skinner, Smith A. Hoosick Falls.
 Original. Traver, Richard D. Troy.
 Ward, R. H. Troy.
 Original. Winship, Charles A. Eagle Mills.

SARATOGA COUNTY.

- Founder. Babcock, Myron N. Saratoga Springs.
 Founder. Comstock, George F. Saratoga Springs.
 Founder. Creal, Charles E. Saratoga Springs.
 Original. Dunlop, John J. Waterford.
 Founder. Grant, Charles S. Saratoga Springs.
 Original. Hall, William H. Saratoga Springs.
 Founder. Hodgman, William H. Saratoga Springs.
 Inlay, Erwin G. Conklingville.
 Original. Johnson, Ianthus G. Greenfield Centre.
 Keefer, Charles W. Mechanicsville.
 Founder. McEwen, Robert C. Saratoga Springs.
 Moriarta, D. C. Saratoga Springs.
 Original. Murray, Byron J. Wilton.
 Original. Preston, John R. Schuylerville.
 Founder. Reynolds, Tabor B. Saratoga Springs.
 Original. Sherer, John D. Waterford.
 Original. Stubbs, Roland H. Waterford.

SCHENECTADY COUNTY.

- Founder. De La Mater, Stephen G. Duaneburgh.

- Ennis, Alexander. Pattersonville.
 Original. McDonald, George E. Schenectady.
 Original. Reagles, James R. Schenectady.
 Steinführer, Gustavus A. F. Schenectady.
 Original. Van Zandt, Henry C. Schenectady.

6

SCHOHARIE COUNTY.

- Original. Hagadorn, William. Gilboa.
 Original. Kingsley, Henry F. Schoharie.

2

WASHINGTON COUNTY.

- Original. Hinds, Frederic J. Salem.
 Lambert, John. Salem.
 Long, Alfred J. Whitehall.

3

THIRD, OR CENTRAL DISTRICT.

BROOME COUNTY.

- Allen, S. P. Whitney's Point.
 Founder. Chittenden, Joseph H. Binghamton.
 Original. Ely, Henry Oliver. Binghamton.
 Greene, Clark W. Chenango Forks.
 Original. Hall, Henry C. Leslie.
 Original. Jackson, David P. Binghamton.
 Kenyon, Benjamin. Triangle.
 Knapp, W. H. Union Centre.
 Meacham, Isaac D. Binghamton.
 Founder. Orton, John G. Binghamton.
 Pierce, Edward A. Binghamton.
 Pierson, G. E. Kirkwood.
 Founder. Putnam, Frederick W. Binghamton.
 Original. Race, W. F. Binghamton.
 Founder. Richards, Charles B. Binghamton.
 Wells, E. H. Binghamton.

16

CAYUGA COUNTY.

- Original. Kenyon, M. Moravia.
 Original. Laird, William R. Auburn.
 Founder. MacDonald, Carlos F. Auburn.

3

CHEMUNG COUNTY.

- Original. Brown, Charles W. Elmira.
 Original. Flood, Patrick H. Elmira.
 Morrell, Isaac. Elmira.
 Original. Price, John H. Elmira.
 Original. Ross, Frank W. Elmira.
 Squire, Charles L. Elmira.
 Original. Wales, Theron A. Elmira.

7

CHENANGO COUNTY.

- Founder. Avery, George W. Norwich.
 Original. Blair, Louis P. McDonough.
 Original. Brooks, Leroy J. Norwich.
 Copley, Herman D. Bainbridge.
 Guy, John D. Coventry.
 Hand, S. M. Norwich.
 Hayes, Philetus A. Afton.
 Original. Johnson, Leonard M. Greene.
 Original. Lyman, Elijah S. Sherburne.
 Original. Lyman, H. C. Sherburne.
 Packer, Thurston G. Smyrna.
 Smith, Samuel L. Smithville.

12

CORTLAND COUNTY.

- Original. Clark, DeWitt. Marathon.
 Founder. Green, Caleb. Homer.
 Halbert, M. L. Cincinnatus.
 Founder. Hendrick, Henry C. McGrawville.
 Founder. Hyde, Frederick. Cortland.
 Founder. Jewett, Homer O. Cortland.
 Original. Knapp,* John H. Harford.
 Original. Smith, Marcellus R. Cincinnatus.
 Original. Tripp, John D. Virgil.

9

DELAWARE COUNTY.

- Original. Allaben, Orson M. Margaretville.
 Morrow, William B. Walton.
 Smith, George C. Delhi.

* Deceased.

- Travis, Edward M. Masonville.
 Original. Young, Oscar H. Sidney Center.

5

MADISON COUNTY.

- Original. Babcock, H. E. Canastota.
 Original. Birdsall, Gilbert. N. Brookfield.
 Bullock, Ephraim H. Cazenovia.
 Burhyte, O. W. Brookfield.
 Cavana, Martin. Oneida.
 Original. Carpenter, Henry W. Oneida.
 Original. Nicholson, A. R. Madison.
 Ure, Herman D. Wampsville.

8

ONONDAGA COUNTY.

- Original. Aberdein, Robert. Syracuse.
 Founder. Allen, Henry B. Baldwinsville.
 Original. Cook, George W. Syracuse.
 Founder. Dallas, Alexander J. Syracuse.
 Founder. Didama, Henry D. Syracuse.
 Original. Donohue, Florence O. Syracuse.
 Earle, George W. Tully.
 Founder. Earll, George W. Skaneateles.
 Original. Edwards, Amos S. Syracuse.
 Elder, J. S. Lysander.
 Original. Edwards, George A. Syracuse.
 Founder. Elsner, Henry L. Syracuse.
 Frazee, A. Blair. Elbridge.
 Original. Gillette, Charles A. Syracuse.
 Original. Hatch, C. A. Syracuse.
 Founder. Head, Adelbert D. Syracuse.
 Original. Higgins, Seabury M. Memphis.
 Original. Jacobson, Nathan. Syracuse.
 Original. Knapp, Edwin A. Jamesville.
 Founder. Kneeland, Jonathan. South Onondaga.
 Original. Munson, W. W. Otisco.
 Founder. Parsons, Israel. Marcellus.
 Original. Saxer, Leonard A. Syracuse.
 Founder. Skinner, L. C. Belle Isle.
 Founder. Slocum, * J. O. Camillus.

* Deceased.

- Stephenson, F. Halleck. Syracuse.
 Founder. Van de Warker, Ely. Syracuse.
 Original. Whitford, James. Onondaga Valley.

28

OTSEGO COUNTY.

- Original. Hills, Lyman H. Cooperstown.
 Founder. Leaning, John K. Fly Creek.
 Original. Martin, John H. Otego.
 Original. Merritt, George. Cherry Valley.
 Original. Sweet, Joseph. Unadilla.

5

SCHUYLER COUNTY.

- Broderick, William P. Havana.
 Roper, P. B. Alpine.
 Smelzer, Baxter T. Havana.

3

SENECA COUNTY.

- Allison, Henry E. Willard.
 Blaine, Myron D. Willard.
 Founder. Lester, Elias. Seneca Falls.
 Original. Rhodes, S. D. Seneca Falls.
 Founder. Schoonmaker, E. J. Magee's Corners.
 Seaman, Frank G. Seneca Falls.

6

TIOGA COUNTY.

- Original. Ayer, W. L. Owego.
 Original. Eastman, Robert W. Owego.

2

TOMPKINS COUNTY.

- Founder. Beers, John E. Danby.
 Farrington, John M. Trumansburg.
 Founder. Fitch, William. Dryden.
 Flickinger, John. Trumansburg.

4

FOURTH, OR WESTERN DISTRICT.

ALLEGHANY COUNTY.

- Original. Stephenson, James A. Scio.
 Original. Wakely, Benjamin C. Angelica.

2

CATTARAUGUS COUNTY.

- Original. Tompkins, Orren A. East Randolph.
 Ellsworth, Victor A. East Otto.

2

CHAUTAUQUA COUNTY.

- Founder. Ames, Edward. Sherman.
 Founder. Chace, William. Mayville.
 Original. Darling, Frank B. Westfield.
 Founder. Dean, Harmon J. Brocton.
 Rogers, H. Raymond. Dunkirk.
 Founder. Strong, Thomas D. Westfield.

6

ERIE COUNTY.

- Founder. Andrews, Judson B. Buffalo.
 Original. Atwood, H. L. Collins Centre.
 Original. Baker, Milan. Buffalo.
 Original. Banta, Rollin L. Buffalo.
 Original. Barker, Arthur M. Buffalo.
 Original. Bartlett, Frederick W. Buffalo.
 Barton, Bernard. Buffalo.
 Original. Boies, Loren F. East Hamburg.
 Original. Briggs, Albert H. Buffalo.
 Brown, George L. Buffalo.
 Original. Burwell, George M. Buffalo.
 Founder. Cronyn, John. Buffalo.
 Original. Dagenais, Alphonse. Buffalo.
 Original. Daniels, Clayton M. Buffalo.
 Original. Dorland, Elias T. Buffalo.
 Fell, George E. Buffalo.
 Fowler, Joseph. Buffalo.
 Frederick, Carlton C. Buffalo.
 Founder. Gay,* Charles C. F. Buffalo.

* Deceased.

- Gould, Cassius W. Buffalo.
 Granger, William D. Buffalo.
 Green, Stephen S. Buffalo.
 Original. Greene, De Witt C. Buffalo.
 Founder. Greene, Joseph C. Buffalo.
 Original. Greene, Walter D. Buffalo.
 Original. Harrington, D. W. Buffalo.
 Hayd, Herman E. Buffalo.
 Heath, William H. Buffalo.
 Founder. Hoyer, F. F. Tonawanda.
 Hubbell, Alvin A. Buffalo.
 Original. Johnson, Thomas M. Buffalo.
 Original. King, James E. Buffalo.
 Long, Ben. G. Buffalo.
 Original. Lynde, Uri C. Buffalo.
 Original. Murray, William D. Tonawanda.
 Park, Roswell. Buffalo.
 Original. Pettit, John A. Buffalo.
 Original. Putnam, James W. Buffalo.
 Founder. Ring, William. Buffalo.
 Founder. Rochester, Thomas F. Buffalo.
 Stockton, Charles G. Buffalo.
 Strong, Orville C. Colden.
 Thornton, William H. Buffalo.
 Founder. Tremaine, William S. Buffalo.
 Trull, H. P. Williamsville.
 Original. Vaughn, Frank O. Buffalo.
 Wheeler, Isaac G. Marilla.
 Founder. Wyckoff, Cornelius C. Buffalo.

48

GENESEE COUNTY.

- Original. Crane, Frank W. Corfu.
 Founder. Jackson, Albert P. Oakfield.
 Original. McNamara, Daniel L. Batavia.
 Founder. Sprague, William B. Pavilion.
 Founder. Townsend, Morris W. Bergen.
 Woodward, C. H. Batavia.

6

LIVINGSTON COUNTY.

- Dodge, Frank B. Mount Morris.
 Founder. Gray, John W. Avon.

- Jones, George H. Fowlerville.
 Kneeland, B. T. Dalton.
 Original. Menzie, R. J. Caledonia.
 Original. Moyer, Frank H. Moscow.

6

MONROE COUNTY.

- Original. Briggs, William H. Rochester.
 Original. Buckley, Charles. Rochester.
 Original. Buckley, James. Rochester.
 Original. Burke, John J. A. Rochester.
 Original. Collins, Thomas B. Rochester.
 Original. Dunning, J. D. Webster.
 Fenno, Henry M. Rochester.
 Original. Fuller, Winfield S. Fairport.
 Founder. Hovey, B. L. Rochester.
 Maine, Alva P. Webster.
 McDougall, William D. Spencerport.
 Founder. Moore, Edward M. Rochester.
 Original. Moore, Edward M., Jr. Rochester.
 Original. Moore, Richard Mott. Rochester.
 Nold, John B. Rochester.
 Original. O'Hare, Thomas A. Rochester.
 Original. Pease, Joseph. Hamlin.
 Founder. Reynolds, R. C. Pittsford.
 Snook, George. Parma.

19

NIAGARA COUNTY.

- Original. Clark, Simeon T. Lockport.
 Eddy, George P. Lewiston.
 Huggins, William Q. Sanborn.

8

ONTARIO COUNTY.

- Original. Allen, Duncan S. Hall's Corners.
 Original. Allen, James H. Gorham.
 Founder. Bentley, Francis R. Cheshire.
 Original. Budd, J. Henry. Geneva.
 Cruttenden, Albert G. Clifton Springs.
 De Laney, John Pope. Geneva.
 Original. Hicks, W. Scott. Bristol.

- Original. Hollister, Edwin O. East Bloomfield.
Founder. Nichols, H. W. Canandaigua.
Founder. Simmons, E. W. Canandaigua.
Founder. Smith, Joseph T. Canandaigua.
Original. Vanderhoof, Frederick D. Phelps.

12

ORLEANS COUNTY.

- Original. Bailey, William C. Albion.
Original. Barnum, Eugene E. Waterport.
Founder. Chapman, James. Medina.
Curtis, Daniel. Jeddo.
Original. Taylor, John H. Holley.
Founder. Tompkins, H. C. Knowlesville.

6

STEUBEN COUNTY.

- Original. Dunn, Jeremiah. Bath.
Original. Ellison, Metler D. Canisteo.
Fowler, Thomas B. Cohocton.
Hunter, Nathaniel P. Jasper.
Original. Jamison, John S. Hornellsville.
Original. Perry, Nathaniel M. Troupsburgh.
Robinson, Joseph W. Hornellsville.

7

WAYNE COUNTY.

- Founder. Arnold, J. Newton. Clyde.
Founder. Colvin, Darwin. Clyde.
Horton, David B. Red Creek.
Original. Ingraham, Samuel. Palmyra.
Lamont, John C. Sodus.
Original. Landon, Newell E. Newark.
Nutton, Wilbur F. Newark.
Founder. Pomeroy, Charles G. Newark.
Original. Sayers, Alexander. Marion.
Original. Sprague, John A. Williamson.
Sprague, L. S. Williamson.
Original. Young, Augustus A. Newark.

12

WYOMING COUNTY.

- Original. Ellinwood, A. G. Attica.
 Lusk, Zera J. Warsaw.
 Original. Palmer, George M. Pike.
 Original. Rae, Robert. Portageville.
 Rudgers, Denton W. Perry.

5

YATES COUNTY.

- Oliver, William. Penn Yan.
 Smith, David M. Penn Yan.

2

FIFTH, OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

- Baker, Benjamin N. Rhinebeck.
 Original. Barnes, Edwin. Pleasant Plains.
 Original. Bayley, Guy Carleton. Poughkeepsie.
 Founder. Campbell, Cornelius N. Poughkeepsie.
 Founder. Coddington, George H. Amenia.
 Founder. Cramer, William. Poughkeepsie.
 Original. Fletcher, Charles L. Wing's Station.
 Founder. Guernsey,* Desault. Amenia.
 Founder. Kittredge, Charles S. Fishkill-on-Hudson.
 Founder. Leroy, Irving D. Pleasant Valley.
 Founder. Porteous, James G. Poughkeepsie.
 Founder. Pultz, Monroe T. Stanfordville.
 Founder. Slack, Henry. Fishkill-on-Hudson.
 Original. Sutton, George Samuel. East Fishkill.
 Original. Van Wyck, Richard C. Hopewell Junction.
 Original. Young, John. Fishkill-on-Hudson.

16

KINGS COUNTY.

- Original. Andrews, John S. East New York.
 Founder. Baker, George W. Brooklyn, E. D.
 Bell, A. Nelson. Brooklyn.
 Benton, Stuart H. Brooklyn.

* Deceased.

- Original. Brundage, Amos H. Brooklyn.
 Original. Conway, John Francis. Brooklyn.
 Creamer, Joseph. Brooklyn, E. D.
 Creamer, Joseph, Jr. Brooklyn, E. D.
 Feeley, James F. Brooklyn, E. D.
 Gardiner, William F. Brooklyn.
 Founder. Hutchison, Joseph C. Brooklyn.
 Original. Jenkins, John A. Brooklyn, E. D.
 Original. Leighton, Nathaniel W. Brooklyn.
 Little, Frank. Brooklyn.
 Original. Lloyd, T. Mortimer. Brooklyn.
 Original. Lung, Jesse B. Brooklyn.
 Original. McCollum, William. Brooklyn.
 Original. Minard, E. J. Chapin. Brooklyn.
 Original. Murray, S. J. Brooklyn.
 Original. North, Nelson L. Brooklyn.
 Original. Paine, Arthur R. Brooklyn.
 Original. Partridge, Charles C. Brooklyn.
 Original. Pray, S. R. Brooklyn.
 Ransom, H. B. Brooklyn.
 Rochester, Thomas M. Brooklyn.
 Founder. Rushmore, John D. Brooklyn.
 Original. Russell, William G. Brooklyn.
 Founder. Segur, Avery. Brooklyn.
 Original. Shepard, A. Warren. Brooklyn.
 Original. Sizer, Nelson Buell de S. Brooklyn.
 Founder. Squibb, Edward H. Brooklyn.
 Founder. Squibb, Edward R. Brooklyn.
 Original. Steinke, Carl Otho Hermann. Brooklyn.
 Sullivan, John D. Brooklyn.
 Original. Thayer, William Henry. Brooklyn.
 Original. Wieber, George. Brooklyn.
 Original. Williams, William H. Brooklyn.
 Founder. Wyckoff, Richard M. Brooklyn.

NEW YORK COUNTY.

- Original. Allen, S. Busby. New York.
 Allen, Thomas H. New York.
 Original. Arcularius, Lewis. New York.
 Original. Arnold, Edmund S. F. New York.
 Arnold, Glover C. New York.
 Original. Bathgate, James. Morrisania, New York.

- Original. Biggs, Herman M. New York.
 Original. Blakeman, William N. New York.
 Founder. Bozeman, Nathan. New York.
 Original. Bryant, Joseph D. New York.
 Original. Buchanan, Alexander. New York.
 Original. Bull, Charles Stedman. New York.
 Original. Burchard, Thomas H. New York.
 Founder. Cameron, Edward M. New York.
 Original. Carter, H. Skelton. New York.
 Original. Chauveau, Jean F. New York.
 Original. Chrystie, T. M. Ludlow. New York.
 Clark, Alonzo. New York.
 Collins, Stacy B. New York.
 Founder. Conover, William S. New York.
 Conway, John R., Jr. New York.
 Original. Curry, Walker. New York.
 Original. Denison, C. Ellery. New York.
 Original. Denison, Ellery. New York.
 Founder. Dennis, Frederic S. New York.
 Founder. Detmold, William. New York.
 Founder. Du Bois, Abram. New York.
 Original. Du Bois, Matthew B. New York.
 Dudley, A. Palmer. New York.
 Original. Eliot, Ellsworth. New York.
 Farrington, Joseph O. New York.
 Flinn, Thomas W. P. New York.
 Founder. Flint,* Austin. New York.
 Founder. Flint, Austin, Jr. New York.
 Founder. Flint, William H. New York.
 Foster, George V. New York.
 Frankenberg, Jacob H. New York.
 Original. Franklin, Thomas M. New York.
 Original. Furman, Guido. New York.
 Original. Garrish, John P. New York.
 Goldthwaite, Henry. New York.
 Founder. Gouley, John W. S. New York.
 Grauer, Frank. New York.
 Original. Griswold,* Gaspar. New York.
 Founder. Hamilton,* Frank H. New York.
 Original. Harrison, George Tucker. New York.
 Original. Hartman, Jacob. New York.
 Original. Hills, S. Augden. New York.

* Deceased.

- Founder. Hinton, John H. New York.
Founder. Hodgman, Abbott. New York.
Hubbard, Oliver P. New York.
Founder. Hubbard, Samuel T. New York.
Original. Ilgen, Ernest. New York.
Founder. Janeway, Edward G. New York.
Jenkins, William T. New York.
Kearney, Thomas J. New York.
Laudus, E. New York.
Original. Lauer, Eugen. New York.
Founder. Leale, Charles A. New York.
Lewengood, Samuel. New York.
Founder. Linsly, Jared. New York.
Lockwood, Charles E. New York.
Founder. Lusk, William T. New York.
Lynch, Patrick J. New York.
McIlroy, Samuel H. New York.
Founder. McLeod, S. B. Wylie. New York.
Original. McLochlin, James A. New York.
Original. McNamara, Laurence J. New York.
Founder. Manley, Thomas H. New York.
Meier, Gottlieb C. H. New York.
Original. Miller, William T. New York.
Original. Miranda, Ramon L. New York.
Original. Mitchell, Hubbard W. New York.
Original. Murphy, John. New York.
Newberry, John S. New York.
Original. Newman, Robert. New York.
Founder. Nicoll, Henry D. New York.
Original. Oberndorfer, Isidor P. New York.
Palmer, Edmund J. New York.
Original. Parsons, John. New York.
Perry, John Gardner. New York.
Original. Porter, P. Brynberg. New York.
Founder. Purple, Samuel S. New York.
Read, Ira B. New York.
Original. Ricketts, Benjamin M. New York.
Roth, Julius A. New York.
Ruggles, Augustus D. New York.
Original. Sabine, Gustavus A. New York.
Founder. Sayre, Lewis A. New York.
Founder. Sayre, Lewis Hall. New York.
Sayre, Reginald H. New York.

- Shrady, John. New York.
 Original. Skiff, George V. New York.
 Original. Smith, J. Lewis. New York.
 Original. Smith, Samuel W. New York.
 Original. Smith, Stephen. New York.
 Founder. Taylor, Isaac E. New York.
 Founder. Thomas, T. Gaillard. New York.
 Founder. Tucker, Carlos P. New York.
 Van Fleet, Frank. New York.
 Vincent, Ludger C. New York.
 Original. Wallach, Joseph G. New York.
 Walsh, Simon J. New York.
 Founder. Ward, Charles S. New York.
 Warner, John W. New York.
 Founder. White, Whitman V. New York.
 Founder. White, William T. New York.
 Founder. Wiener, Joseph. New York.
 Founder. Wood, Charles S. New York.
 Original. Wyeth, John A. New York.

110

ORANGE COUNTY.

- Conner, Milton C. Middletown.
 Original. Eager, William B. Middletown.
 Original. Hunt, James H. Port Jervis.
 Original. Pooler, Hiram A. Goshen.

4

PUTNAM COUNTY.

- Founder. Murdock, George W. Cold Spring.
 Founder. Young, William. Cold Spring.

2

QUEENS COUNTY.

- Original. Burns, William J. Roslyn.
 Original. Rave, Edward G. Oyster Bay.
 Original. Webb, Edwin. Hempstead.

3

RICHMOND COUNTY.

- Founder. Carroll, Alfred Ludlow. New Brighton.
 Founder. Johnston, Francis U. New Brighton.

2

ROCKLAND COUNTY.

- Founder. Govan, William. Stony Point.
 Hasbrouck, John Mabie. Garnerville.
 Stevenson, William G. Nyack.

3

SUFFOLK COUNTY.

- Original. Banks, George B. Huntington.
 Original. Chambers, Martin L. Port Jefferson.
 Hamill, Edward H. Islip.
 Hulse, William A. Bay Shore.
 Original. Lindsay, Walter. Huntington.
 Founder. Woodend, William D. Huntington.

6

SULLIVAN COUNTY.

- Original. Bennett, Thomas W. Jeffersonville.
 De Kay, William H. Parksville.
 Original. Gillespie, Alfred A. Bethel.
 Original. Munson, J. A. Grahamsville.
 Original. Purdy,* Isaac. Mongaup Valley.

5

ULSTER COUNTY.

- Original. Chambers, Jacob. Kingston.
 Founder. Cooke, George W. Kingston.
 Original. HoornBeek, Philip Du Bois. Wawarsing.
 Founder. Hühne, August. Rondout.
 Original. Hühne, Frederick. Rondout.
 Founder. McKenzie, Edward. Port Ewen.
 Original. Van Hoevenberg, Henry. Kingston.
 Original. Ward, Stanley M. Ellenville.

8

WESTCHESTER COUNTY.

- Ashton, Isaiah H. Dobb's Ferry.
 Original. Brush, Edward F. Mount Vernon.
 Founder. Collins,* Isaac G. Sing Sing.
 Original. Coutant, Richard B. Tarrytown.
 Original. Furman, J. Henry. Tarrytown.

* Deceased.

Original.	Huntington, Henry K.	New Rochelle.
Founder.	Husted, Nathaniel C.	Tarrytown.
Original.	Lyons, G. A.	New Rochelle.
Founder.	Pryer, William C.	New Rochelle.
Original.	Schmidt, H. Ernest.	White Plains.
Original.	Southworth, Richmond Joseph.	Yonkers.
Original.	Wells, William L.	New Rochelle.

12

SUMMARY OF FELLOWSHIP BY DISTRICT.

First District.....	94
Second District.....	93
Third District.....	108
Fourth District.....	136
Fifth District.....	209
Total Fellowship.....	640

RECAPITULATION.

Founders, published in the Proceedings of the Convention at Albany in February, 1884, 164. In Fellowship 1885.....	158
Original Fellows, appointed before the adjournment of the First An- nual Meeting in 1884, 286. In Fellowship 1885.....	279
Fellows, appointed since the adjournment of the First Annual Meet- ing in 1884.....	203
Total Fellowship.....	640

ALPHABETICAL LIST OF FELLOWS.

- Abell, Ira H., Antwerp, Jefferson Co. Founder.
Aberdein, Robert, 2 Greeley Block, Syracuse, Onondaga Co. Original.
Allaben, Orson M., Margaretville, Delaware Co. Original.
Allen, Amos, Grafton, Rensselaer Co. Original.
Allen, Charles S., Greenbush, Rensselaer Co. Founder.
Allen, Duncan S., Hall's Corners, Ontario Co. Original.
Allen, Henry B., Baldwinsville, Onondaga Co. Founder.
Allen, James H., Gorham, Ontario Co. Original.
Allen, S. Busby, 144 E. 83d St., New York, New York Co. Original.
Allen, S. P., Whitney's Point, Broome Co.
Allen, Thomas H., 19 Park Ave., New York, New York Co.
Allen, William L., Greenbush, Rensselaer Co.
Allison, Henry E., Willard, Seneca Co.
Ames, Edward, Sherman, Chautauqua Co. Founder.
Andrews, John S., Pennsylvania Ave., n. Fulton Ave., Brooklyn, Kings Co. Original.
Andrews, Judson B., Buffalo Insane Asylum, Buffalo, Erie Co. Founder.
Arcularius, Lewis, 180 2d Ave., New York, New York Co. Original.
Armstrong, James A., Clinton, Oneida Co.
Arnold, Edmund S. F., 53 W. 38th St., New York, New York Co. Original.
Arnold, Glover C., 115 E. 30th St., New York, New York Co.
Arnold, J. Newton, Clyde, Wayne Co. Founder.
Ashton, Isaiah H., Dobb's Ferry, Westchester Co.
Atwood, H. L., Collins Centre, Erie Co. Original.
Avery, George W., Norwich, Chenango Co. Founder.
Ayer, W. L., Owego, Tioga Co. Original.
*Ayres, Alexander, Fort Plain, Montgomery Co. Founder.
Ayres, Douglas, Fort Plain, Montgomery Co. Original.
Babcock, H. E., Canastota, Madison Co. Original.
Babcock, Myron N., Saratoga Springs, Saratoga Co. Founder.
Backus, Ogden, State Lunatic Asylum, Utica, Oneida Co. Original.
Bacon, Charles G., Fulton, Oswego Co.

* Deceased.

- Bagg, Moses M., Utica, Oneida Co. Original.
- Bailey, Theodore P., 95 Eagle St., Albany, Albany Co. Founder.
- Bailey, William C., Albion, Orleans Co. Original.
- Baker, Benjamin N., Rhinebeck, Dutchess Co.
- Baker, George W., 48 Bedford Ave., Brooklyn, E. D., Kings Co. Founder.
- Baker, Milan, 471 Niagara St., Buffalo, Erie Co. Original.
- Baker, Smith, Whitesborough, Oneida Co.
- Banks, George B., Huntington, Suffolk Co. Original.
- Banta, Rollin L., 330 Elk St., Buffalo, Erie Co. Original.
- Barker, Arthur M., 137 W. Tupper St., Buffalo, Erie Co. Original.
- Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.
- Barnum, D. Albert, Cassville, Oneida Co.
- Barnum, Eugene E., Waterport, Orleans Co. Original.
- Barney, Charles S., Glens Falls, Warren Co. Original.
- Bartlett, Frederick W., 112 Ellicott St., Buffalo, Erie Co. Original.
- Barton, Lyman, Willsborough, Essex Co. Founder.
- Bartow, Bernard, 220 Franklin St., Buffalo, Erie Co.
- Bates, Nelson W., Central Square, Oswego Co.
- Bates, Xyris T., New Lebanon, Columbia Co. Original.
- Bathgate, James, Fordham Ave., Morrisania, New York, New York Co. Original.
- Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.
- Baynes, William T., 189 N. 2d St., Troy, Rensselaer Co. Original.
- Beers, John E., Danby, Tompkins Co. Founder.
- Bell, A. Nelson, 119 2d Place, Brooklyn, Kings Co.
- Benham, John C., Hudson, Columbia Co. Original.
- Bennett, Thomas W., Jeffersonville, Sullivan Co. Original.
- Bentley, Francis R., Cheshire, Ontario Co. Founder.
- Benton, Stuart H., 546 Franklin Ave., Brooklyn, Kings Co.
- Biggam, William H., Jr., Fort Plain, Montgomery Co. Original.
- Biggs, Herman M., 21 E. 21st St., New York, New York Co. Original.
- Birdsall, Gilbert, N. Brookfield, Madison Co. Original.
- Blaine, Myron D., Willard, Seneca Co.
- Blair, Louis P., McDonough, Chenango Co. Original.
- Blake, Clarence R., Northville, Fulton Co. Original.
- Blakeman, William N., 28 W. 37th St., New York, New York Co. Original.
- Blumer, G. Alder, State Lunatic Asylum, Utica, Oneida Co. Original.
- Boies, Loren F., East Hamburgh, Erie Co. Original.
- Bond, G. F. M., Asylum, Utica, Oneida Co.
- Bonesteel, William N., Mill St., Troy, Rensselaer Co. Founder.
- Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co. Original.
- Booth, Wilbur H., 172 Genesee St., Utica, Oneida Co. Original.
- Bozeman, Nathan, 296 5th Ave., New York, New York Co. Founder.

- Briggs, Albert H., 267 Hudson St., Buffalo, Erie Co. Original.
- Briggs, William H., 138 E. Main St., Rochester, Monroe Co. Original.
- Broderick, William P., Havana, Schuyler Co.
- Brooks, Leroy J., Norwich, Chenango Co. Original.
- Brown, Charles W., 312 W. Church St., Elmira, Chemung Co. Original.
- Brown, George L., 173 Niagara St., Buffalo, Erie Co.
- Brundage, Amos H., 666 Gates Ave., Brooklyn, Kings Co. Original.
- Brush, Edward N., State Lunatic Asylum, Utica, Oneida Co. Original.
- Brush, Edward F., Mount Vernon, Westchester Co. Original.
- Bryant, Joseph D., 66 W. 35th St., New York, New York Co. Original.
- Buchanan, Alexander, 355 W. 30th St., New York, New York Co. Original.
- Buckley, Charles, 127 E. Main St., Rochester, Monroe Co. Original.
- Buckley, James, 127 E. Main St., Rochester, Monroe Co. Original.
- Bucklin, Daniel D., 575 2d Ave., Lansingburgh, Rensselaer Co. Original.
- Budd, J. Henry, Geneva, Ontario Co. Original.
- Bull, Charles Stedman, 51 W. 36th St., New York, New York Co. Original.
- Bullock, Ephraim H., Cazenovia, Madison Co.
- Burbeck, Charles H., 91 1st St., Troy, Rensselaer Co. Founder.
- Burchard, Thomas H., 24 W. 40th St., New York, New York Co. Original.
- Burhyt, O. W., Brookfield, Madison Co.
- Burke, John J. A., 65 East Ave., Rochester, Monroe Co. Original.
- Burns, William J., Roslyn, Queens Co. Original.
- Burton, Matthew H., 75 4th St., Troy, Rensselaer Co. Founder.
- Burwell, George N., 130 Pearl St., Buffalo, Erie Co. Original.
- Cameron, Edward M., 47 W. 26th St., New York, New York Co. Founder.
- Campbell, Cornelius N., Poughkeepsie, Dutchess Co. Founder.
- Carpenter, Henry W., Oneida, Madison Co. Original.
- Carroll, Alfred Ludlow, New Brighton, Richmond Co. Founder.
- Carter, H. Skelton, 130 E. 24th St., New York, New York Co. Original.
- Cavana, Martin, Oneida, Madison Co.
- Chace, William, Mayville, Chautauqua Co. Founder.
- Chambers, Jacob, Kingston, Ulster Co. Original.
- Chambers, Martin L., Port Jefferson, Suffolk Co. Original.
- Chapman, James, Medina, Orleans Co. Founder.
- Chauveau, Jean F., 6 Ludlow Pl., New York, New York Co. Original.
- Chittenden, Joseph H., Binghamton, Broome Co. Founder.
- Chrystie, T. M. Ludlow, 100 W. 53d St., New York, New York Co. Original.
- Church, Charles A., Bloomingdale, Essex Co.
- Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co.
- Clark, Alonzo, 23 E. 21st St., New York, New York Co.
- Clark, De Witt C., Marathon, Cortland Co. Original.
- Clark, Simeon Tucker, Lockport, Niagara Co. Original.
- Clarke, Wallace, 136 Park Ave., Utica, Oneida Co.

- Codding, George H., Amenia, Dutchess Co. Founder.
*Coit, William N., Champlain, Clinton Co. Founder.
*Collins, Isaac G., Sing Sing, Westchester Co. Founder.
Collins, Stacy B., 106 E. 35th St., New York, New York Co.
Collins, Thomas B., 141 E. Main St., Rochester, Monroe Co. Original.
Colvin, Darwin, Clyde, Wayne Co. Founder.
Comstock, George F., Saratoga Springs, Saratoga Co. Founder.
Conkling, George, Durham, Greene Co. Original.
Conner, Milton C., Middletown, Orange Co.
Conover, William S., 108 E. 29th St., New York, New York Co. Founder.
Conway, John Francis, 388 Bedford Ave., Brooklyn, Kings Co. Original.
Conway, John R., Jr., 14 Lexington Ave., New York, New York Co.
Cook, George W., Syracuse, Onondaga Co. Original.
Cooke, George W., Kingston, Ulster Co. Founder.
Cooley, R. N., Hannibal Centre, Oswego Co.
Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.
Cooper, William S., 81 3d St., Troy, Rensselaer Co. Founder.
Copley, Herman D., Bainbridge, Chenango Co.
Coutant, Richard B., Tarrytown, Westchester Co. Original.
Cramer, William, Poughkeepsie, Dutchess Co. Founder.
Crane, Frank W., Corfu, Genesee Co. Original.
Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.
Creal, Charles E., Saratoga Springs, Saratoga Co. Founder.
Creamer, Joseph, 144 Hewes St., Brooklyn, E. D., Kings Co.
Creamer, Joseph, Jr., 284 Bedford Ave., Brooklyn, E. D., Kings Co.
Crim, Frank D., 171 Genesee St., Utica, Oneida Co.
Crombie, Walter C., Schaghticoke, Rensselaer Co. Original.
Cronyn, John, 55 W. Swan St., Buffalo, Erie Co. Founder.
Crosby, Alexander H., Lowville, Lewis Co.
Cruttenden, Albert G., Clifton Springs, Ontario Co.
Curry, Walker, 21 E. 61st St., New York, New York Co. Original.
Curtis, Daniel, Jeddo, Orleans Co.
Dagenais, Alphonse, 348 E. Eagle St., Buffalo, Erie Co. Original.
Dallas, Alexander J., 48 Warren St., Syracuse, Onondaga Co. Founder.
Daniels, Clayton M., 82 N. Pearl St., Buffalo, Erie Co. Original.
Darling, Frank B., Westfield, Chautauqua Co. Original.
D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
Dean, Harmon J., Brocton, Chautauqua Co. Founder.
De Kay, William H., Parksville, Sullivan Co.
De La Mater, S. G., Duanesburg, Schenectady Co. Founder.
De Laney, John Pope, Geneva, Ontario Co.
Denison, Charles Ellery, 124 W. 13th St., New York, New York Co. Original.

* Deceased.

- Denison, Ellery, 124 W. 13th St., New York, New York Co. Original.
Dennis, Frederic S., 21 E. 21st St., New York, New York Co. Founder.
Detmold, William, 38 E. 9th St., New York, New York Co. Founder.
De Witt, Byron, Oswego, Oswego Co. Original.
de Zouche, Isaac, Gloversville, Fulton Co. Founder.
Didama, Henry D., 112 S. Salina St., Syracuse, Onondaga Co. Founder.
Dodge, Amos P., Oneida Castle, Oneida Co.
Dodge, Frank B., Mount Morris, Livingston Co.
Dodge, Lyndhurst C., Rouse's Point, Clinton Co. Founder.
Donohue, Florence O., 54 S. Clinton St., Syracuse, Onondaga Co. Original.
Dorland, Elias T., 86 N. Division St., Buffalo, Erie Co. Original.
Douglass, A. J., Ilion, Herkimer Co.
Douglass, Charles E., Constableville, Lewis Co.
Douglass, James W., Booneville, Oneida Co.
Drake, D. Delos, Central Square, Oswego Co.
Du Bois, Abram, 16 W. 30th St., New York, New York Co. Founder.
Du Bois, Matthew B., 16 W. 30th St., New York, New York Co. Original.
Dudley, A. Palmer, 640 Madison Ave., New York, New York Co.
Dunlop, John J., Waterford, Saratoga Co. Original.
Dunn, Jeremiah, Bath, Steuben Co. Original.
Dunning, J. D., Webster, Monroe Co. Original.
Eager, William B., Middletown, Orange Co. Original.
Earle, George W., Tully, Onondaga Co.
Earll, George W., Skaneateles, Onondaga Co. Founder.
Eastman, Robert W., Owego, Tioga Co. Original.
Eddy, George P., Lewiston, Niagara Co.
Edgerly, Edward F., Moriah Centre, Essex Co. Founder.
Edwards, Amos S., 367 N. Salina St., Syracuse, Onondaga Co. Original.
Edwards, George A., Catharine and Lodi Sts., Syracuse, Onondaga Co. Original.
Elder, J. Stevens, Lysander, Onondaga Co.
Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original.
Ellinwood, A. G., Attica, Wyoming Co. Original.
Ellison, Metler D., Canisteo, Steuben Co. Original.
Ellsworth, Victor A., East Otto, Cattaraugus Co.
Elsner, Henry L., 308 N. Salina St., Syracuse, Onondaga Co. Founder.
Ely, Henry Oliver, Binghamton, Broome Co. Original.
English, G. P., Booneville, Oneida Co.
Ennis, Alexander, Pattersonville, Schenectady Co.
Farrington, John M., Binghamton, Broome Co.
Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
Feely, James F., 296 Lorimer St., Brooklyn, E. D., Kings Co.
Fell, George E., 72 Niagara St., Buffalo, Erie Co.

- Fenno, Henry Marshall, 77 W. Main St., Rochester, Monroe Co.
 Ferguson, Everard D., 1 Union Place, Troy, Rensselaer Co. Founder.
 Ferguson, James, Glens Falls, Warren Co. Original.
 Finder, William, Jr., 2 Union Place, Troy, Rensselaer Co. Founder.
 Fitch, William, Dryden, Tompkins Co. Founder.
 Fitzgerald, David J., Glens Falls, Warren Co.
 Flandrau, Thomas M., Rome, Oneida Co.
 Fletcher, Charles L., Wing Station, Dutchess Co. Original.
 Flickinger, John, Trumansburg, Tompkins Co.
 Flinn, Thomas W. P., 137 E. 28th St., New York, New York Co.
 *Flint, Austin, 418 Fifth Ave., New York, New York Co. Founder.
 Flint, Austin, Jr., 14 W. 33d St., New York, New York Co. Founder.
 Flint, William H., 110 E. 39th St., New York, New York Co. Founder.
 Flood, Patrick H., 501 E. Water St., Elmira, Chemung Co. Original.
 Foster, George V., 109 E. 18th St., New York, New York Co.
 Fowler, Joseph, 31 Church St., Buffalo, Erie Co.
 Fowler, Thomas B., Cohocton, Steuben Co.
 Fox, Eli, Mohawk, Herkimer Co.
 Frankenberg, Jacob H., 142 E. 74th St., New York, New York Co.
 Franklin, Thomas M., Blackwell's Island Lunatic Asylum, New York, New York Co. Original.
 Fraser, Jefferson C., Ava, Oneida Co.
 Frazee, A. Blair, Elbridge, Onondaga Co.
 Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.
 French, S. H., Amsterdam, Montgomery Co.
 Fuller, Earl D., 66 Varick St., Utica, Oneida Co.
 Fuller, Winfield S., Fairport, Monroe Co. Original.
 Furman, Guido, 425 W. 73d St., New York, New York Co. Original.
 Furman, J. Henry, Tarrytown, Westchester Co. Original.
 Gardiner, W. F., 162 Sixth Ave., Brooklyn, Kings Co.
 Garlock, William D., Little Falls, Herkimer Co.
 Garrish, John P., 400 W. 57th St., New York, New York Co. Original.
 *Gay, Charles C. F., 180 Franklin St., Buffalo, Erie Co. Founder.
 Gibson, William M., 187 Genesee St., Utica, Oneida Co.
 Gillespie, Alfred A., Bethel, Sullivan Co. Original.
 Gillette, Charles A., S. Salina and Castle Sts., Syracuse, Onondaga Co. Original.
 Gillis, William, Fort Covington, Franklin Co. Founder.
 Glass, James H., 170 Genesee St., Utica, Oneida Co.
 Glidden, Charles H., Little Falls, Herkimer Co. Original.
 Goldthwaite, Henry, Fifth Ave. Hotel, New York, New York Co.
 Gould, Cassius W., 1428 Main St., Buffalo, Erie Co.

* Deceased.

- Gouley, John W. S., 324 Madison Ave., New York, New York Co. Founder.
- Govan, William, Stony Point, Rockland Co. Founder.
- Grauer, Frank, 338 E. 26th St., New York, New York Co.
- Granger, William D., Asylum, Buffalo, Erie Co.
- Grant, Charles S., Saratoga Springs, Saratoga Co. Founder.
- Graves, Ezra, Amsterdam, Montgomery Co. Original.
- Gray, John P., State Lunatic Asylum, Utica, Oneida Co. Founder.
- Gray, John P., Jr., State Lunatic Asylum, Utica, Oneida Co.
- Gray, John W., Avon, Livingston Co. Founder.
- Green, Caleb, Homer, Cortland Co. Founder.
- Green, H. H., Paine's Hollow, Herkimer Co.
- Green, Stephen S., 384 Swan St., Buffalo, Erie Co.
- Greene, Clark W., Chenango Forks, Broome Co.
- Greene, De Witt C., Buffalo, Erie Co. Original.
- Greene, Joseph C., 124 E. Swan St., Buffalo, Erie Co. Founder.
- Greene, Walter D., 444 Elk St., Buffalo, Erie Co. Original.
- *Griswold, Gaspar, 251 Madison Ave., New York, New York Co. Original.
- *Guernsey, Desault, Amenia, Dutchess Co. Founder.
- Guy, J. D., Coventry, Chenango Co.
- Hagadorn, William, Gilboa, Schoharie Co. Original.
- Halbert, M. L., Cincinnatus, Cortland Co.
- Hall, Henry C., Leslie, Broome Co. Original.
- Hall, John E., 62 George St., Green Island, Albany Co. Original.
- Hall, William A., 38 Montgomery St., Syracuse, Onondaga Co. Original.
- Hall, William H., Saratoga Springs, Saratoga Co. Original.
- Hamill, Edward H., Islip, Suffolk Co.
- *Hamilton, Frank H., 43 W. 32d St., New York, New York Co. Founder.
- Hand, S. M., Norwich, Chenango Co.
- Hannan, James C., Hoosick Falls, Rensselaer Co. Founder.
- Harrington, D. W., 1430 Main St., Buffalo, Erie Co. Original.
- Harrison, George Tucker, 221 W. 23d St., New York, New York Co. Original.
- Hartmann, Jacob, 217 W. 31st St., New York, New York Co. Original.
- Harvie, J. B., 565 1st St., Troy, Rensselaer Co. Founder.
- Hasbrouck, John Mabie, Garnerville, Rockland Co.
- Hatch, C. A., 4 E. Onondaga St., Syracuse, Onondaga Co. Original.
- Hayd, Herman E., 9 Niagara St., Buffalo, Erie Co.
- Hayes, Philetus A., Afton, Chenango Co.
- Head, Adelbert D., Syracuse, Onondaga Co. Founder.
- Heath, William H., 5 Chippewa St., Buffalo, Erie Co.
- Heimstreet, Thomas B., 18 Liberty St., Troy, Rensselaer Co. Original.

* Deceased.

- Hendrick, Henry C., McGrawville, Cortland Co. Founder.
Hicks, W. Scott, Bristol, Ontario Co. Original.
Higgins, Seabury M., Memphis, Onondaga Co. Original.
Hills, Lyman H., Cooperstown, Otsego Co. Original.
Hills, Samuel Augden, 53 E. 123d St., New York, New York Co. Original.
Hinds, Frederic J., Salem, Washington Co. Original.
Hinton, John H., 41 W. 32d St., New York, New York Co. Founder.
Hodgman, Abbott, 141 E. 38th St., New York, New York Co. Founder.
Hodgman, William H., 109 Caroline St., Saratoga Springs, Saratoga Co. Founder.
Holden, Arthur L., 116 South St., Utica, Oneida Co.
Hollister, Edwin O., East Bloomfield, Ontario Co. Original.
HoonBeek, Philip Du Bois, Wawarsing, Ulster Co. Original.
Horton, David B., Red Creek, Wayne Co.
Houston, David W., 62 Oneida St., Cohoes, Albany Co. Original.
Hovey, B. L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.
Howe, Edwin S., Saranac, Clinton Co. Original.
Hoyer, F. F., Tonawanda, Erie Co. Founder.
Hubbard, Oliver P., 65 W. 19th St., New York, New York Co.
Hubbard, Samuel T., 27 W. 9th St., New York, New York Co. Founder.
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.
Huggins, William Q., Sanborn, Niagara Co.
Hughes, Henry R., Clinton, Oneida Co.
Hühne, August, Rondout, Ulster Co. Founder.
Hühne, Frederick, Rondout, Ulster Co. Original.
Hulse, William A., Bay Shore, Suffolk Co.
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original.
Hunt, James H., Port Jervis, Orange Co. Original.
Hunter, Nathaniel P., Jasper, Steuben Co.
Huntington, Henry K., New Rochelle, Westchester Co. Original.
Huntington, John W., Mexico, Oswego Co.
Husted, Nathaniel C., Tarrytown, Westchester Co. Founder.
Hutchison, Joseph C., 130 Hicks St., Brooklyn, Kings Co. Founder.
Hyde, Frederick, Cortland, Cortland Co. Founder.
Ilgen, Ernest, 213 E. 17th St., New York, New York Co. Original.
Ingraham, Samuel, Palmyra, Wayne Co. Original.
Inlay, Erwin G., Conklingville, Saratoga Co.
Jackson, Albert P., Oakfield, Genesee Co. Founder.
Jackson, David P., Binghamton, Broome Co. Original.
Jacobson, Nathan, 114 S. Salina St., Syracuse, Onondaga Co. Original.
Jamison, John S., Hornellsville, Steuben Co. Original.
Janeway, Edward G., 51 E. 25th St., New York, New York Co. Founder.
Jenkins, John A., 150 Milton St., Brooklyn, E. D., Kings Co. Original.

- Jenkins, William T., 71 Lexington Ave., New York, New York Co.
Jewett, Homer O., Cortland, Cortland Co. Founder.
Johnson, Charles M., Watertown, Jefferson Co. Founder.
Johnson, George P., Mexico, Oswego Co.
Johnson, Ianthus G., Greenfield Centre, Saratoga Co. Original.
Johnson, Leonard M., Greene, Chenango Co. Original.
Johnson, Parley H., Adams, Jefferson Co. Original.
Johnson, Richard G., Amsterdam, Montgomery Co. Original.
Johnson, Thomas M., 309 Main St., Buffalo, Erie Co. Original.
Johnston, Francis U., New Brighton, Richmond Co. Founder.
Jones, George H., Fowlerville, Livingston Co.
Joslin, Albert A., Greig, Lewis Co.
Kearney, Thomas J., 107 Lexington Ave., New York, New York Co.
Keefer, Charles W., Mechanicsville, Saratoga Co.
Keith, Halbert Lyon, West Sand Lake, Rensselaer Co.
Kelly, John Devin, 181 Genesee St., Utica, Oneida Co.
Kenyon, Benjamin, Triangle, Broome Co.
Kenyon, M., Moravia, Cayuga Co. Original.
Kilborn, Henry F., Croghan, Lewis Co.
King, James E., 16 E. Seneca St., Buffalo, Erie Co. Original.
Kingsley, Henry F., Schoharie, Schoharie Co. Original.
Kittredge, Charles S., Fishkill-on-Hudson, Dutchess Co. Founder.
Knapp, Edwin A., Jamesville, Onondaga Co. Original.
*Knapp, John H., Harford, Cortland Co. Original.
Knapp, W. H., Union Centre, Broome Co.
Kneeland, B. T., Dalton, Livingston Co.
Kneeland, Jonathan S., Onondaga, Onondaga Co. Founder.
Kuhn, William, Rome, Oneida Co.
La Bell, Martin J., Lewis, Essex Co. Original.
Laird, William R., 98 Wall St., Auburn, Cayuga Co. Original.
Lambert, John, Salem, Washington Co.
Lamont, John C., Sodus, Wayne Co.
Landon, Newell E., Newark, Wayne Co. Original.
Laudus, E., 206 E. 79th St., New York, New York Co.
Lauer, Eugene, 308 E. 15th St., New York, New York Co. Original.
Leach, H. M., Glen, Montgomery Co. Original.
Leale, Charles A., 604 Madison Ave., New York, New York Co. Founder.
Leaning, John K., Fly Creek, Otsego Co. Founder.
Leighton, N. W., 143 Taylor St., Brooklyn, E. D., Kings Co. Original.
Le Roy, Irving D., Pleasant Valley, Dutchess Co. Founder.
Lester, Elias, Seneca Falls, Seneca Co. Founder.
Lester, Sullivan W., 381 1st St., Troy, Rensselaer Co. Original.

* Deceased.

- Lewengood, Samuel, 129 E. 84th St., New York, New York Co.
Lindsay, Walter, Huntington, Suffolk Co. Original.
Linsly, Jared, 22 Lafayette Place, New York, New York Co. Founder.
Little, Frank, 135 Remsen St., Brooklyn, Kings Co.
Lloyd, T. Mortimer, 265 Henry St., Brooklyn, Kings Co. Original.
Lockwood, Charles E., 29 W. 36th St., New York, New York Co.
Lockwood, J. W., Philmont, Columbia Co. Original.
Long, Alfred J., Whitehall, Washington Co.
Long, Ben G., 1430 Main St., Buffalo, Erie Co.
Lung, Jesse B., 662 Herkimer St., Brooklyn, Kings Co. Original.
Lusk, William T., 47 E. 34th St., New York, New York Co. Founder.
Lusk, Zera J., Warsaw, Wyoming Co.
Lyman, Elijah S., Sherburne, Chenango Co. Original.
Lyman, H. O., Sherburne, Chenango Co. Original.
Lynch, Patrick J., 216 E. 13th St., New York, New York Co.
Lynde, Uri C., 13 Niagara St., Buffalo, Erie Co. Original.
Lyon, E. M., Plattsburgh, Clinton Co. Founder.
Lyon, George E., 494 Groton St., West Troy, Albany Co. Original.
Lyons, G. A., New Rochelle, Westchester Co. Original.
MacDonald, Carlos F., Asylum for Insane Criminals, Auburn, Cayuga Co. Founder.
Magee, Daniel, 92 4th St., Troy, Rensselaer Co. Original.
Magee, John, 484 2d Ave., Lansingburgh, Rensselaer Co. Original.
Maine, Alva P., Webster, Monroe Co.
Manley, Thomas H., 244 W. 55th St., New York, New York Co. Founder.
Marsh, James P., 1 Union Place, Troy, Rensselaer Co.
Martin, John H., Otego, Otsego Co. Original.
Martine, Godfrey R., Glens Falls, Warren Co. Original.
McCollum, William, 195 Lefferts Place, Brooklyn, Kings Co. Original.
McDonald, George E., Schenectady, Schenectady Co. Original.
McDougall, William D., Spencerport, Monroe Co.
McEwen, Robert C., Saratoga Springs, Saratoga Co. Founder.
McGann, Thomas, Wells, Hamilton Co.
McIlroy, Samuel H., 330 Alexander Ave., New York, New York Co.
McKenzie, Edward, Port Ewen, Ulster Co. Founder.
McLeod, S. B. Wylie, 247 W. 23d St., New York, New York Co. Founder.
McLochlin, James A., 203 7th Ave., New York, New York Co. Original.
McNamara, Daniel L., Batavia, Genesee Co. Original.
McNamara, Laurence J., 126 Washington Place (West), New York, New York Co. Original.
McTammany, William F., 192 3d St., Troy, Rensselaer Co. Original.
Meacham, Isaac D., Binghamton, Broome Co.
Meier, Gottlieb C. H., 215 E. 53d St., New York, New York Co.

- Menzie, R. J., Caledonia, Livingston Co. Original.
- Merritt, George, Cherry Valley, Otsego Co. Original.
- Miller, J. H., Carthage, Jefferson Co.
- Miller, William T., 310 W. 27th St., New York, New York Co. Original.
- Minard, E. J. Chapin, 243 Quincy St., Brooklyn, Kings Co. Original.
- Miranda, Ramon L., 54 W. 37th St., New York, New York Co. Original.
- Mitchell, Howard E., 45 5th St., Troy, Rensselaer Co. Founder.
- Mitchell, Hubbard W., 747 Madison Ave., New York, New York Co. Original.
- Moore, Edward M., 74 N. Fitzhugh St., Rochester, Monroe Co. Founder.
- Moore, Edward M., Jr., 74 N. Fitzhugh St., Rochester, Monroe Co. Original.
- *Moore, Joseph W., 92 Mohawk St., Cohoes, Albany Co. Founder.
- Moore, Richard Mott, 74 N. Fitzhugh St., Rochester, Monroe Co. Original.
- Moriarta, D. C., Saratoga Springs, Saratoga Co.
- Morrell, Isaac, 218 Madison Ave., Elmira, Chemung Co.
- Morrow, William B., Walton, Delaware Co.
- Moyer, Frank H., Moscow, Livingston Co. Original.
- Munger, Charles, Knoxborough, Oneida Co.
- Munson, J. A., Grahamsville, Sullivan Co. Original.
- Munson, W. W., Otisco, Onondaga Co. Original.
- Murdock, George W., Cold Spring, Putnam Co. Founder.
- Murphy, John, 219 E. 37th St., New York, New York Co. Original.
- Murray, Byron J., Wilton, Saratoga Co. Original.
- Murray, S. J., 207 Washington Park, Brooklyn, Kings Co. Original.
- Murray, William D., Tonawanda, Erie Co. Original.
- Nelson, George W., Orwell, Oswego Co.
- Nelson, William H., Taberg, Oneida Co.
- Newberry, John S., Columbia College, New York, New York Co.
- Newman, Robert, 68 W. 35th St., New York, New York Co. Original.
- Nichols, Calvin E., 57 4th St., Troy, Rensselaer Co. Founder.
- Nichols, H. W., Canandaigua, Ontario Co. Founder.
- Nichols, William H., West Sand Lake, Rensselaer Co. Founder.
- Nicholson, A. R., Madison, Madison Co. Original.
- Nicoll, Henry D., 7 W. 39th St., New York, New York Co. Founder.
- Nold, John B., 165 North Ave., Rochester, Monroe Co.
- North, Nelson L., 108 Ross St., Brooklyn, E. D., Kings Co. Original.
- Nutten, Wilbur F., Newark, Wayne Co.
- Oberndorfer, Isidor P., 959 Lexington Ave., New York, New York Co. Original.
- O'Hare, Thomas A., 157 State St., Rochester, Monroe Co. Original.
- Oliver, William, Penn Yan, Yates Co.
- Orton, John G., Binghamton, Broome Co. Founder.

* Deceased.

- Packer, Thurston G., Smyrna, Chenango Co.
- Paine, Arthur R., 479 Clinton Ave., Brooklyn, Kings Co. Original.
- Palmer, Edmund J., 131 E. 86th St., New York, New York Co.
- Palmer, George M., Pike, Wyoming Co. Original.
- Palmer, Henry C., cor. Genesee and Hopper Sts., Utica, Oneida Co.
- Palmer, Walter B., 30 South St., Utica, Oneida Co.
- Park, Roswell, 305 Delaware Ave., Buffalo, Erie Co.
- Parr, John, Buel, Montgomery Co.
- Parsons, Israel, Marcellus, Onondaga Co. Founder.
- Parsons, John, Bailey Ave., near Kingsbridge Road, New York, New York Co. Original.
- Parsons, W. W. D., Fultonville, Montgomery Co.
- Partridge, Charles C., 207 Greene Ave., Brooklyn, Kings Co. Original.
- Pease, Joseph, Hamlin, Monroe Co. Original.
- Perry, John Gardner, 48 E. 34th St., New York, New York Co.
- Perry, Nathaniel M., Troupsburgh, Steuben Co. Original.
- Peters, Samuel, 86 Mohawk St., Cohoes, Albany Co. Founder.
- Pettit, John A., 526 S. Divison St., Buffalo, Erie Co. Original.
- Pierce, Edward A., Binghamton, Broome Co.
- Pierson, George E., Kirkwood, Broome Co.
- Pilgrim, Charles W., State Lunatic Asylum, Utica, Oneida Co. Original.
- Pollard, Abiather, Westport, Essex Co. Original.
- Pomeroy, Charles G., Newark, Wayne Co. Founder.
- Pooler, Hiram A., Goshen, Orange Co. Original.
- Porteous, James G., Poughkeepsie, Dutchess Co. Founder.
- Porter, Harry N., New York Mills, Oneida Co. Founder.
- Porter, P. Brynberg, 22 W. 31st St., New York, New York Co. Original.
- Potter, Vaughn C., Starkville, Herkimer Co. Original.
- Pray, S. R., 198 S. 9th St., Brooklyn, Kings Co. Original.
- Preston, John R., Schuylerville, Saratoga Co. Original.
- Prier, John H., 523 Union St., Elmira, Chemung Co. Original.
- Pryer, William C., New Rochelle, Westchester Co. Founder.
- Pultz, Monroe T., Stanfordville, Dutchess Co. Founder.
- *Purdy, Isaac, Mongaup Valley, Sullivan Co. Original.
- Purple, Samuel S., 36 W. 22d St., New York, New York Co. Founder.
- Putnam, Frederick W., Binghamton, Broome Co. Founder.
- Putnam, James W., 130 Pearl St., Buffalo, Erie Co. Original.
- Quin, Hamilton S., 171 Genesee St., Utica, Oneida Co.
- Race, W. F., Binghamton, Broome Co. Original.
- Rae, Robert, Portageville, Wyoming Co. Original.
- Rand, Hannibal W., Keene, Essex Co. Original.
- Ransom, H. B., 164 Columbia Heights, Brooklyn, Kings Co.

- Rave, Edward G., Hicksville, Queens Co. Original.
Read, Ira B., 18 E. 126th St., New York, New York Co.
Reagles, James, Schenectady, Schenectady Co. Original.
Reid, Christopher C., Rome, Oneida Co.
Reynolds, R. C., Pittsford, Monroe Co. Founder.
Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.
Rhodes, S. D., Seneca Falls, Seneca Co. Original.
Rice, Isaac, Bloomingdale, Essex Co. Original.
Richards, Charles B., Binghamton, Broome Co. Founder.
Ricketts, Benjamin M., 146 E. 36th St., New York, New York Co. Original.
Riley, Andrew W., Au Sable Forks, Clinton Co. Original.
Ring, William, 364 Niagara St., Buffalo, Erie Co. Founder.
Robb, William H., Amsterdam, Montgomery Co. Founder.
Roberts, John L. D., New York Mills, Oneida Co.
Robinson, Ezra A., Jay, Essex Co. Original.
Robinson, Joseph W., Hornellsville, Steuben Co.
Rochester, Thomas F., 216 Franklin St., Buffalo, Erie Co. Founder.
Rochester, Thomas M., 2 St. James Place, Brooklyn, Kings Co.
Rogers, H. Raymond, Dunkirk, Chautauqua Co.
Rogers, S. Frank, 123 Vail Ave., Troy, Rensselaer Co. Original.
Roper, P. B., Alpine, Schuyler Co.
Ross, Frank W., 251 Baldwin St., Elmira, Chemung Co. Original.
Roth, Julius A., 308 E. 79th St., New York, New York Co.
Rousseau, Zotique, 99 2d St., Troy, Rensselaer Co. Founder.
Rudgers, Denton W., Perry, Wyoming Co.
Ruggles, Augustus D., 93 Clinton Place, New York, New York Co.
Rulison, Elbert T., Amsterdam, Montgomery Co. Original.
Rushmore, John D., 129 Montague St., Brooklyn, Kings Co. Founder.
Russell, Charles P., 198 Genesee St., Utica, Oneida Co.
Russell, William G., 165 S. 9th St., Brooklyn, E. D., Kings Co. Original.
Sabin, Robert H., 245 Broadway, West Troy, Albany Co. Founder.
Sabin, William B., 245 Broadway, West Troy, Albany Co. Founder.
Sabine, Gustavus A., 8 E. 24th St., New York, New York Co. Original.
Sawyer, Conant, Au Sable Forks, Essex Co. Founder.
Saxer, Leonard A., N. Salina and Union Sts., Syracuse, Onondaga Co. Original.
Sayers, Alexander, Marion, Wayne Co. Original.
Sayre, Lewis A., 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Lewis Hall, 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Reginald H., Bellevue Hospital, New York, New York Co.
Schmid, H. Ernest, White Plains, Westchester Co. Original.
Schoonmaker, E. J., Magee's Corners, Seneca Co. Founder.

- Segur, Avery, 281 Henry St., Brooklyn, Kings Co. Founder.
Selden, O. G., Catskill, Greene Co. Original.
Selden, Robert, Catskill, Greene Co. Original.
Seman, Frank G., Seneca Falls, Seneca Co.
Seymour, W. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.
Sharer, John P., Little Falls, Herkimer Co. Original.
Shepard, A. Warner, 126 Willoughby St., Brooklyn, Kings Co. Original.
Sherer, John D., Waterford, Saratoga Co. Original.
Shrady, John, 66 W. 126th St., New York, New York Co.
Simmons, E. W., Canandaigua, Ontario Co. Founder.
Simons, Frank E., Canajoharie, Montgomery Co.
Sizer, Nelson Buell de S., 336 Greene Ave., Brooklyn, Kings Co. Original.
Skiff, George V., 1734 Broadway, New York, New York Co. Original.
Skinner, L. C., Belle Isle, Onondaga Co. Founder.
Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original.
Slack, Henry, Fishkill-on-Hudson, Dutchess Co. Founder.
*Slocum, J. O., Camillus, Onondaga Co. Founder.
Smeallie, James A., Canajoharie, Montgomery Co.
Smelzer, Baxter T., Havana, Schuyler Co.
Smith, David M., Penn Yan, Yates Co.
Smith, George C., Delhi, Delaware Co.
Smith, H. Lyle, Hudson, Columbia Co. Original.
Smith, J. Lewis, 64 W. 56th St., New York, New York Co. Original.
Smith, Joseph T., Canandaigua, Ontario Co. Founder.
Smith, Marcellus R., Cincinnatus, Cortland Co. Original.
Smith, Samuel L., Smithville, Chenango Co.
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Young, John D., Starkville, Herkimer Co.	Original.
Young, Oscar H., Sidney Centre, Delaware Co.	Original.
Young, William, Cold Spring, Putnam Co.	Founder.

SUMMARY.

Total number of Fellows at adjournment of the First Annual Meeting in 1884.....	514
Fellows appointed at and since the adjournment of the Second Annual Meeting in 1885.....	127
	<hr/>
	641
Deceased (Founders, 9 ; Original Fellows, 3).....	12
	<hr/>
Total Fellowship.....	629

DECEASED FELLOWS.

NAME.	COUNTY.	AGE.	DATE OF DEATH.	PLACE OF BIRTH.	MEDICAL COLLEGE.	Year of graduation
Adams, John G.....	New York Co..	77	June 19, 1884.	New York City.....	Coll. Phys. and Surg., N. Y...	1830
Ayres, Alexander.....	Montgomery Co.	74	Aug. 27, 1886.	.....	Castleton, Vermont.....	1842
Church, Allen S.....	New York Co..	62	Oct. 24, 1884.	Great Barrington, Mass.	Castleton, Vermont.....	1848
Coit, William N.....	Clinton Co....	52	Aug. 4, 1886..	Plattsburgh, N. Y.....	University of Pennsylvania...	1856
Collins, Isaac G.....	Westchester Co.	53	Dec. 18, 1885.	Granville, N. Y.....	Albany Med. Coll.....	1858
Cornell, F. O.....	Montgomery Co.	29	Dec. 3, 1884..	Glenville, N. Y.....	Albany Med. Coll.....	1880
Cotes, J. R.....	Genesee Co....	54	Mar. 20, 1884.	Batavia, N. Y.....	Med. Dep. Univ. Buffalo.....	1852
Davidson, John.....	Queens Co....	91	Dec. 26, 1884.	New York City.....	Lic. N. Y. St. Med. Soc.....	1829
Flint, Austin.....	New York Co.	73	Mar. 13, 1886.	Petersham, Mass.....	Harvard Med. Coll.....	1833
Gay, Charles C. F.....	Erie Co.....	66	Mar. 27, 1886.	Pittsfield, Mass.....	Berkshire Med. Coll.....	1846
Griswold, Gaspar.....	New York Co..	29	Mar. 4, 1886..	New York City.....	Bellevue Hosp. Med. Coll.....	1878
Guernsey, Desault.....	Dutchess Co...	55	Dec. 9, 1885..	Wilton, N. Y.....	Coll. Phys. and Surg., N. Y...	1850
Hamilton, Frank H.....	New York Co..	73	Aug. 11, 1886.	Wilmington, Vt.....	University of Pennsylvania...	1835
Knapp, John H.....	Cortland Co....	67	April 30, 1886.	New Fairfield, Conn. {	Chenango Co. (N. Y.) Med. Soc.	1843
Moore, Joseph W.....	Albany Co....	47	Sept. 9, 1886..	Troy, N. Y.....	Geneva Med. Coll.....	1861
Pask, William.....	Erie Co.....	55	Aug. 24, 1884.	England.....	Castleton, Vermont.....	1859
Peck, M. R.....	Warren Co....	62	April 4, 1884.	Sand Lake, N. Y... .	Med. Dept. Univ. of Buffalo..	1884
Purdy, Isaac... ..	Sullivan Co....	57	Dec. 6, 1885..	Wallkill, N. Y.....	Albany Med. Coll.....	1851
Slocum, J. O.....	Onondaga Co..	65	Mar. 3, 1885..	Pompey, N. Y.....	Castleton, Vermont.....	1846
Stephens, Frederick P.....	New York Co..	31	Dec. 4, 1884..	Ithaca, N. Y.....	Bellevue Hosp. Med. Coll.....	1877

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